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ABSTRACT

Presented is the third year interim report of a 4-year longitudinal study comparing effectiveness of seven preschool programs which serve approximately 69 deaf children. Schools are seen to emphasize either an oral-aural, Rochester (oral-aural plus fingerspelling), or total communication approach to language development. Reported are the following results: Ss' scores on visual-motor subtests of the Illinois Test of Psycholinguistic Abilities (ITPA) were almost identical to scores of normal hearing children; Ss were superior to hearing norms in the test of manual expression; Ss in more structured programs scored higher on the ITPA than Ss in less structured programs; scores of Ss were higher than norms on four subtests of the Metropolitan Readiness Test; scores on a new Receptive Communication Scale showed sound alone to be the least efficient communication mode (43 percent) rising to 86 percent when speechreading, fingerspelling, and signs were added; ratings with the Expressive Communication scale revealed that raters correctly identified 37 percent of Ss' expressive attempts; Ss in two programs (oral-aural and total communication) achieved higher articulation scores than Ss in other programs; Ss in a program basing its curriculum on concepts of J. Piaget scored higher than other Ss on a test of Cognitive Development Measures; in child to child communication the most common mode was sign language; in child to teacher communication the most common mode was oral-aural followed by sign; and parents of children in oral-only programs now have neutral rather than negative attitudes toward manual communication. (DE)

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EVALUATION OF PROGRAMS FOR HEARING IMPAIRED CHILDREN: Report of 1972-73

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University of Minnesota
Research, Development and Demonstration
Center in Education of Handicapped Children
Minneapolis, Minnesota

December 1973

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3. M. Buium. Interrogative types in parental speech to language learning children: a linguistic universal? Research Report #56. December 1973.

4. D. Krus. Order analysis: A fortran program for generalizable multidimensional analysis of binary data matrices. Occasional Paper #22. November 1973.

5. W. Bart. The pseudo-problem of IQ. Occasional Paper #21. October 1973.

6. J. Turnure & M. Thurlow. Verbal elaboration and the enhancement of language abilities in the mentally retarded: The role of interrogative sentence-forms. Occasional Paper #20. October 1973.

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9. R. Hoffmeister & D. Moores. The acquisition of specific reference in the linguistic system of a deaf child of deaf parents. Research Report #53. August 1973.

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11. C. Clark & J. Greco. MELDS (Minnesota Early Language Development Sequence) Glossary of Behavior and Signs. Occasional Paper #18. June 1973.

12. J. Turnure. Interrelations of orienting responses, response latency and stimulus choice in children's learning. Research Report #52. May 1972.

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20. J. Turnure & M. Thurlow. The latency of forward and backward association responses in an elaboration task. Research Report #47. March 1973.

21. R. Riegel & A. Taylor. Strategies in the classroom: A summer remedial program for young handicapped children. Occasional Paper #14. March 1973.

22. D. Moores. Early childhood special education for the hearing impaired. Occasional Paper #13. February 1973.

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24. J. Rynders. Two basic considerations in utilizing mothers as tutors of their very young retarded or potentially retarded children. Occasional Paper #12. January 1973.

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Research, Development and Demonstration
Center in Education of Handicapped Children
Minneapolis, Minnesota

December 1973

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Department of Health, Education and Welfare
U. S. Office of Education
Bureau of Education for the Handicapped

RESEARCH AND DEVELOPMENT CENTER
IN EDUCATION OF HANDICAPPED CHILDREN
Department of Special Education
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The University of Minnesota Research, Development and Demonstration Center in Education of Handicapped Children has been established to concentrate on intervention strategies and materials which develop and improve language and communication skills in young handicapped children.

The long term objective of the Center is to improve the language and communication abilities of handicapped children by means of identification of linguistically and potentially linguistically handicapped children, development and evaluation of intervention strategies with young handicapped children and dissemination of findings and products of benefit to young handicapped children.

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CHAPTER 1

SUMMARY

The present report covers data gathered during the 1972-73 academic year on seven preschool programs for the deaf. Planning for the project began in 1969 and data were first gathered in 1970-71. The project is scheduled to continue until 1974 when four years of longitudinal data will have been gathered. The programs involved represent a diversity of educational philosophies and methodologies. The results of the first three years of analysis have produced the following results:

1. The overall scores of subjects on the five visual-motor subtests of the Illinois Test of Psycholinguistic Abilities (ITPA) in spring of 1972 (179.96) and 1973 (180.03) were almost identical to the norms established for children with normal hearing (180.00), suggesting essentially normal visual-motor functioning for the deaf children in the study.
2. On all five of the subtests, scores remained stable from 1972 to 1973.
3. On one test, Manual Expression, deaf children evinced a superiority relative to hearing norms both in 1972 and 1973, suggesting that deaf children may develop superior skills in this area.
4. Scores on the ITPA were influenced by the amount of structure in a program, with those in more structured programs scoring higher.
5. ITPA scores correlated with teachers' ratings of pupils'

making the most and least progress and with scores on receptive communication.

6. The scores of the deaf subjects were higher than the normal standardization population on the sum of four subtests of the Metropolitan Readiness Test which were administered, (Matching, Alphabet, Numbers, Copying). Deaf students were statistically superior on the Matching and Alphabet subtests and inferior on the Numbers subtest. Success on the Alphabet subtest was related to a program's use of manual communication.
7. The results on the Metropolitan Readiness Tests indicate that the programs have provided children with technical skills necessary for success in the first grade.
8. Results from one program raise the possibility that integration of deaf children with younger hearing children, rather than with age mates, might tend to dissipate earlier academic gains.
9. The Receptive Communication Scale originally used in 1972 to assess five modes of receptive communication: 1) Sound Alone, 2) Printed Word, 3) Sound plus Speechreading, 4) Sound and Speechreading plus Fingerspelling and 5) Sound and Speechreading plus Signs, was expanded to incorporate greater grammatical complexity.
10. Results of testing on the Receptive Communication Scale reveal that:

    a) The least efficient mode was Sound alone (43%).

Performance increased with the addition of each component, rising to 63% with the addition of speechreading, 72% with fingerspelling and 86% with signs. The mean score for reception of the Printed Word was 56%. This represents the same order of difficulty reported in 1972.

b) The total per cent correct across programs increased from 50% in 1972 to 62% in 1973. The range of scores across programs decreased from 1972 (43% to 60%) to 1973 (59% to 69%).

11. Scores on the Receptive Communication Scale were significantly correlated to hearing loss for children in Oral-Only programs (.61, $p < .01$) but not for children in combined programs (.09, not significant).

12. Results of testing on the revised Expressive Communication Scale reveal that:

    a. Raters correctly identified 37% of the expressive attempts for 69 children.

    b. By groups, Interpreters achieved 47% correct, while Deaf Adults and Graduate Students achieved 35% and 32% correct respectively.

13. Comparisons by t-test show the New Mexico School for the Deaf and the Maryland School for the Deaf to be significantly superior ($p > .01$) to the Rochester School for the Deaf and the Minneapolis Program.

Per cent correct for individual children ranged from 9 to 65%.

14. In articulation scores, children in two programs performed significantly higher than those in the other five. The same two programs are superior on the Sound Alone subtest of the Receptive Communication Test. No explanation of this situation is available at present. One program is Oral-Aural and one is Total Communication.

15. Despite statistical differences on average scores between programs in articulation the range of scores within programs is similar. Each program has children whose articulation skills are almost completely unintelligible.

16. Three Cognitive Development Measures, based on Piagetian concepts, were developed and administered to assess classification, conservation and seriation. Children in the program which has based much of its curriculum in Piaget's theory were superior on this battery. There were some correlations with scores in the Metropolitan Readiness Tests.

17. The relationship between functioning on classification, conservation and seriation tasks to other types of functioning being assessed is unclear. For example, children in the program scoring highest in the Cognitive Development Measures were lowest in the Illinois Test of Psycholinguistic Abilities visual-motor subtests. Whether or not specific training on con er ation, classification and seriation per se transfers to other behaviors is worthy of investigation.

18. On the Matching Familiar Figures Test, no differences were

found between programs. Children classified as "impulsive" did relatively poorly only on tests which were timed (Visual Closure on the ITPA, Copying and Matching on the MRT), suggesting they employ inappropriate strategies under time pressures.

19. Classroom observations showed great variation in variables such as Classroom Organization, Structuring Program, and Encouraging Speech and Language Development. There were large differences from the relative program ranks in 1972. Changes in relative rank in classroom observation scores appeared to correspond with changes in ratings of overall program effectiveness.

20. In child to child communication, the most common mode of communication was sign. Oral-Aural and Combined Oral-Manual communication were also frequently observed. Gestures continue to be more common in Oral-Only and Rochester Method programs. Of the two programs using Oral-Aural Communication most frequently, one is a Total Communication program and one is Oral-Aural.

21. In child to teacher communication the most common mode of communication is Oral-Aural, followed by sign. Gestures continue to be employed more frequently in Oral-Only programs.

22. Teacher to child communication most frequently is Oral-Aural followed by sign. Teachers appear to be more consistent in following the expressed philosophy (Rochester Method, Total Communication, Oral-Aural) of a particular program than in past years. However, teachers in Oral Only and Rochester

Method programs continue to place heavy reliance on gestures.

23. In five of the seven programs, consistent communication patterns were observed. In two programs the mode of communication varied as a function of the pair unit involved (child-child, child-teacher or teacher-child).

24. Parents of children in Oral-Only programs have modified their opinions to some degree from 1971 and 1972. In 1972 they saw the main function of programs for the hearing impaired to be the development of speech and speechreading skills. In 1973, they agreed with parents of children in Combined programs that the main function should be the provision of appropriate instruction in academic skills. Responses of Oral program parents toward questions and concepts concerned with manual communication now tend to be neutral rather than negative. They continue to exhibit much stronger support of educational integration.

25. Three programs were identified which seemed to be most effective across eight major areas assessed in the evaluation.

26. As the project continues, evaluation becomes more and more complex, and individual programs exhibit different patterns of strengths and weaknesses. As noted in the beginning of the project, the final objective is not to identify the best of seven programs to serve as a model, but to identify factors which appear to be of benefit to the development of specific skills or abilities (e.g., grammatical, articulatory, academic, intellectual) in young deaf children.

27. Data for the final year of the project will be gathered in 1973-74. The final annual progress report will be disseminated in fall, 1974. The complete report, covering work from 1969 to 1974 is projected for 1975.

CHAPTER 2

INTRODUCTION

The present report marks the completion of the fourth year of work, and the third year of data gathering, of a five year project developed to assess the effectiveness of preschool programs for deaf children. The project is addressed to many of the questions in education of the deaf which have been answered in the past mainly on the basis of rhetoric, emotion and vituperation. An unhealthy fixation on issues such as "oralism" vs. "manualism," residential vs. day settings, parent training vs. child training, and so forth has served to freeze education of the deaf into a pedagogical dark age relatively unresponsive to issues of broader import to education and seemingly unaware of the fact that education of the deaf is a legitimate subset of general education.

It cannot be denied that the issues of methodology and placement are important, even critical. Educators of the deaf cannot be faulted for considering and discussing these issues. They stand condemned, however, by virtue of the fact that, after 200 years of discussion, there is a disheartening lack of supportive evidence on which to make decisions. This is especially true in the preschool area where research has tended to fall into two categories. The first category is represented by comparative studies between programs conducted to fulfill dissertation requirements for a doctoral degree (Craig, 1964; Phillips, 1963). Such investigations can be excellent but by design they are short term in nature, and

are not designed to continue on a longitudinal basis. The second category of research is represented by the work of people evaluating the effectiveness of programs with which they happen to be affiliated (Hester, 1963; McCroskey, 1968; Simmons, 1962; Craig & Craig and DiJohnson, 1972; McConnell & Horton, 1970). In many cases these reports are basically explanations and justifications of certain procedures. Such evaluations serve a useful purpose, but they are usually limited to one program and raise a number of problems, the greatest of which is the difficulty of assignment and treatment of children, i.e., effectively accommodating experimental and control subjects within the same program.

A major incentive for the present project lies in the belief that there are extremely important and complex issues in the education of preschool deaf children which should be investigated. Of equal importance is the hope that the present project will motivate other researchers to bring their talents to bear on issues of practical importance in the education of young deaf children. It must be reported that very little such work is being undertaken at present.

Review of Literature

A review of the results of educational programs for the deaf presents a dismal picture. In spite of an occasional pointing with pride to a deaf Ph.D. or lawyer, who more often than not has a moderate hearing loss or is adventitiously deaf, it is an uncontestable fact that the majority of products of our systems are shamefully

undereducated. Intellectually normal deaf adolescents and adults in North America and Europe are unable to read at the fifth grade level (Furth, 1966; Norden, 1970; Wrightstone, Aranow & Moskowitz, 1963), lack basic linguistic skills in the language of the normally hearing community (Moores, 1970a; Simmons, 1962; Tervoort & Verbeck, 1967), and are incapable of receiving and expressing oral communication on anything but a primitive level (Montgomery, 1966; Report of the Chief Medical Officer of the British Department of Education and Services, 1964).

According to information presented in the Annual Directory of Services edition of the American Annals of the Deaf, the number of deaf children served by preschool programs has risen tremendously in the past ten years (Doctor, 1963; Craig & Craig, 1973) to the point where probably a majority of deaf children in urban areas are identified and receive some treatment prior to the traditional age of school entrance. Unfortunate exceptions are Chicano, Black and Indian children, who are less frequently diagnosed and treated at earlier ages.

Although programs have proliferated, those interested in the development of new programs, or the modification of ongoing ones, quickly discover that almost no educational guidelines exist for effective preschool programs for the deaf. Studies that have been conducted to evaluate the effectiveness of preschool programs have reported either that no differences existed between deaf children receiving preschool training and deaf children not receiving preschool training (McCroskey, 1968; Vernon & Koh, 1970), or that initial

differences existing between the two groups have dissipated by age nine (Craig, 1964; Phillips, 1963).

Except for the report of the results of the first two years of data gathering for the present study (Moores & McIntyre, 1971; Moores, McIntyre, & Weiss, 1972), the only direct comparison of methodology was conducted by Quigley (1969) who reported that preschool children taught by the Rochester Method (the simultaneous use of speech and fingerspelling) were superior to children taught by the Oral-Only approach in measures of speechreading, reading, and written language. Recent research on the relative superiority of deaf children of deaf parents has had a great and growing impact on the field. These findings suggest that deaf children of deaf parents tend to be better adjusted, to achieve academically at a higher level, to have better language abilities, and to have equivalent speech development (Best, 1972; Meadow, 1967; Quigley & Frisina, 1961; Stevenson, 1964; Stuckless & Birch, 1966; Vernon & Koh, 1970) in comparison to deaf children of hearing parents. Of great importance is the evidence that deaf children of deaf parents increase their relative advantage with age so that by late adolescence their superiority is much more pronounced.

In view of the above findings in favor of deaf children of deaf parents (which may have been the result of an exposure to signs from birth), and because studies of Oral-Only programs have shown no differences or only temporary effects, it has been argued that many preschool programs have failed because they have been restricted to Oral-Only instruction (Vernon & Koh, 1971). Perhaps,

then, the addition of manual communication would improve results. Such reasoning has led to the development of many recent preschool programs utilizing a system named Total Communication which involves the use of signs, fingerspelling, and oral-aural communication.

Although the evidence of the superiority of deaf children of deaf parents is substantial, it does not necessarily follow that the use of manual communication in preschool programs will produce better results. At present, no data exist, again excepting the present study, on the comparative efficiency of the use of Total Communication as opposed to either an oral-only method or the Rochester Method. For a comprehensive treatment of research on manual communication, the reader is referred to reviews by Moores (1971).

The lack of data may be traced to two primary concerns. First, the extreme difficulty of evaluating the effectiveness of preschool programs is confounded by the added dimension of deafness. Second, and perhaps an even more inhibiting factor, is the highly emotional nature of the question of methodology with young deaf children. In a report to the Secretary of Health, Education and Welfare (Babbidge, 1965), it was noted that for more than 100 years emotion has served as a substitute for research in the education of the deaf. Some educators firmly believe that the use of any kind of manual communication will prevent the development of speech and language and result in a mute subculture. Others believe, just as firmly, that depriving a deaf child of manual communication will cause irreparable linguistic, educational, and emotional damage. Given such a climate, most

researchers prefer to investigate other questions.

In the authors' opinion, neither concern should stand in the way of a search for objective analysis. Educational decisions must be made daily and, if no information exists, these decisions will continue to be made on the basis of emotion and other, less desirable, factors.

The rationale for this study is based on a modification of Cronbach's (1957) Characteristics by Treatment Interaction Model. The model is based on the thesis that when results of educational research consist entirely of comparisons between groups they are of limited value. Such investigations may be neat and produce results but they frequently mask important interactions between individuals and different types of treatments or educational programs. The search should not be for the "best" method for all children but rather for the preferred method for a particular child at a particular stage. (For a more detailed explanation of this rationale see Moores, 1970b).

During the first year of the study (9/69 - 8/70) formal commitments were given and received from participating programs following visitations and/or discussions with administrators and personnel. The majority of time during the first year was spent in the development and testing of assessment techniques. Testing was facilitated by the proximity and cooperation of two preschool programs for the hearing impaired in the Minneapolis-St. Paul area.

In addition, an advisory committee of qualified professionals was established and convened in November, 1969. This committee

represents several viewpoints and disciplines, and was deemed essential for inputing technical assistance and maintaining objectivity. The committee is as follows:

T. Walter Carlin, Ph.D.
Director
Sir Alexander Ewing Clinic
Ithica College
Ithica, New York

*Diane Castle, Ph.D.
Assistant Professor of Audiology
State University College
Geneseo, New York

Eric Lenneberg, Ph.D.
Professor of Psychology
Cornell University
Ithica, New York

McCay Vernon, Ph.D.
Professor of Psychology
Maryland State College
Westminster, Maryland

1970-71 Report: Evaluation of Programs for Hearing Impaired Children (EPHIC)

Researchers visited each of the seven programs involved for several days in the fall of 1970. Leiter International Performance Scales were administered, background data were collected from the school records and classroom observations were made. All programs were revisited in the spring of 1971. At this time researchers administered five visual-motor subtests of the Illinois Test of Psycholinguistic Abilities, re-examined pupil records, and administered

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*Now Director of the Infant Training Program of the Rochester School for the Deaf.

measures of communication and language ability. Full descriptions of procedures are contained in the report. The following seven programs each considered a strong representative of a particular preschool model, participated in these activities:

American School for the Deaf
West Hartford, Connecticut

Bill Wilkerson Hearing & Speech Center
Nashville, Tennessee

Callier Hearing & Speech Center
Dallas, Texas

Minneapolis Public School Program
Minneapolis, Minnesota

New Mexico School for the Deaf
Santa Fe and Albuquerque, New Mexico

Rochester School for the Deaf
Rochester, New York

St. Paul Public School Program
St. Paul, Minnesota

1970-71 EPHIC Major Results

1. On modifications of five visual-motor subtests of the Illinois Test of Psycholinguistic Abilities (ITPA), the children as a group scored slightly below the norm for hearing children. Regardless of program, methodology or etiology, a definite pattern of scoring occurred across subtests. The children were above the norms on Visual Sequential Memory and Manual Expression and below on Visual Reception and Visual Association. Visual Closure subtests scores revealed a substantial retardation, perhaps due to the timed nature of the test.

2. No significant differences (defined as < .01) were found between Combined (oral-manual) and Oral programs on the ITPA. Children

in structured programs scored higher than those in unstructured programs. When grouped by etiology, children with hereditary deafness were superior to other classifications.

3. The most common mode of communication between children was through gestures, regardless of the official philogophy of the program. The only exception was New Mexico, where signs were most common.

4. Communication from child to teacher most commonly followed the Oral-Aural mode, closely followed by gestures. Gestures were most frequent in Minneapolis, signs in New Mexico and the American School, and fingerspelling in St. Paul.

5. Communication from teacher to child most frequently was Oral-Aural, accompanied by fingerspelling in Rochester and St. Paul and by signs and fingerspelling in New Mexico. Teachers in Oral-Only programs used gestures as much as, or more than, teachers in combined programs.

6. The mean IQ score of the subjects, as measured by the Leiter International Performance Scale, was 113.7. Children in structured programs tended to have higher scores than those in unstructured programs.

7. Speech and speechreading abilities of the children, around chronological age four, were extremely difficult to assess. Ratings of children's attempts at articulation showed no significant differences between oral and combined or structured and unstructured programs.

8. No differences were found in speechreading in the oral-

combined and structured-unstructured comparisons.

9. Semantic differential ratings revealed no differences between parents of children in combined and oral programs in reaction to concepts Hearing Aid, Hearing Impaired, Speech and Auditory Training. Parents of the oral group were more negative toward Speechreading, Sign Language and Fingerspelling and more positive toward Deafness and Integration of a deaf child into a hearing class.

1971-72 Report: Evaluation of Programs for Hearing Impaired Children (EPHIC)

The project followed the same children in each program, with the exception of the Bill Wilkerson Hearing and Speech Center, which withdrew, and the Maryland School for the Deaf, which was added to the study in fall, 1971. Children in all programs were tested in spring 1972. In addition to administration of the tests given in 1971, children were measured on newly developed receptive communication and articulation scales. Children around CA 6 were assessed in the area of academic readiness and academic achievement.

1971-72 EPHIC Major Results.

1. The overall scores of subjects on the five visual-motor subtests of the Illinois Test of Psycholinguistic Abilities norms (ITPA) were almost identical to the norms established for children with normal hearing, suggesting essentially normal visual-motor functioning for deaf children.

2. On four of the five subtests, there was evidence of regression toward the mean, i.e., scores in 1972 tended to be closer to the hearing norm of 36 than did scores in 1971.

3. On one subtest, Manual Expression, the relative superiority of deaf children increased from 1971 to 1972 suggesting that deaf children may develop superior skills in this area.

4. Scores on the ITPA were influenced by the amount of structure in a program with those in more structured programs scoring higher.

5. ITPA scores correlated with teachers' ratings of pupils making the most and least progress.

6. A Receptive Communication Scale was developed to assess five modes of receptive communication: 1) Sound Alone, 2) Printed Word, 3) Sound plus Speechreading, 4) Sound and Speechreading plus Fingerspelling and 5) Sound and Speechreading plus Signs.

7. Results of testing on the Receptive Communication Scale reveal that:

a) The least efficient mode was Sound Alone (34%). Performance increased with the addition of each component, jumping to 56% with the addition of speechreading, 61% with fingerspelling and 71% with signs. The mean score on Reception of the Printed Word was 38%.

b) Children with the highest scores in Reception of Sound plus Speechreading were from programs (St. Paul and New Mexico) using manual and oral communi-

cation from the time the children started their education, suggesting that instead of inhibiting the reception of spoken language, early manual communication probably facilitates it.

8. Scores on the Receptive Communication Scale were significantly correlated to hearing loss for children in oral-only programs (.58, $p < .01$) but not for children in combined programs (.24, not significant).

9. Significant differences were found between children in the lower quartile in hearing from oral programs and children in the upper quartile in hearing in combined programs on receptive communication. No other significant differences were found.

a) The data suggest that early manual communication does not hinder children with substantial residual hearing.

b) The data suggest that lack of manual communication retards receptive ability of children with minimal amounts of residual hearing.

10. No patterns can be found in articulation scores between programs. Whether or not children had Oral-Manual or Oral-Only instruction at the beginning does not appear to be a factor. Success in this area appears to be more a function of program priorities. Children from combined programs represent two of the top three programs in this category.

11. Classroom observations showed great variation in variables such as Classroom Organization, Discipline and Classroom Relationships, Program Structure and Reacting to Pupil Needs. Programs

which scored high in these ratings tended to have children who scored well on all instruments, indicating that classroom structure and organization perhaps deserve consideration equal to that currently given methodology.

12. In child to child communication, the children rely primarily on gestures or signs. Gestures are more common in Oral-Only programs.

13. In child to teacher communication the most common mode of communication is Oral-Aural. Children in Oral-Only programs use gestures next most frequently and those in combined programs use signs.

14. In teacher to child communication, most teachers in combined programs did not consistently use signed/spelled English in coordination with the spoken word. The signed or spelled element frequently represented key words and not full sentences.

15. Teachers in Oral-Only programs gestured extensively. It is unclear if they are aware of the extent to which they are conveying information through manual means.

16. Parents of children in Oral-Only programs see the main function of programs for the hearing impaired to be the development of speech and speechreading skills. They react negatively toward concepts such as Sign Language and Fingerspelling and positively toward the concept Integration of a Deaf Child into a Hearing Class.

17. Parents of children in combined Oral-Manual programs see the main function of programs to be the provision of appropriate instruction in academic skills, i.e., reading, language and writing.

They perceive programs as actually combined Oral-Manual, rating as equally positive Speech, Sign Language, Speech Reading, Auditory Training, Fingerspelling and Hearing Aid.

18. The following common elements were identified in programs with children scoring relatively well across all measures:

a) A heavy cognitive/academic component with emphasis on pre-reading and readiness activities from the beginning.

b) Exposure to both oral and manual communication from time of entrance into the program.

c) Well structured and organized classroom activities.

d) Auditory training activities as integral parts of the school day.

e) Parents who view the program as combined oral-manual and not oral only or manual only.

Activities: 1972-73

The project has continued to follow the same children in each program. Children in all programs were tested in spring, 1973. In addition to administration of the tests given in 1972, children were administered tests of cognitive functioning, expressive communication, and the Matching Familiar Figures Test (MFF).

CHAPTER 3

PROGRAM AND SAMPLE DESCRIPTION

Program Description

The seven participating programs are as follows:

American School for the Deaf
West Hartford, Connecticut

Callier Hearing and Speech Center
Dallas, Texas

Maryland School for the Deaf
Frederick, Maryland

Minneapolis Public School System
Minneapolis, Minnesota

New Mexico School for the Deaf
Albuquerque and Santa Fe, New Mexico

Rochester School for the Deaf
Rochester, New York

St. Paul Public School System
St. Paul, Minnesota

At the onset of the second year of data collection the Bill Wilkerson Hearing and Speech Center withdrew from the evaluation and the Maryland School for the Deaf was added.

Programs were selected to represent a diversity of educational methodologies and philosophies. The authors are aware of differences that exist in the definitions of these various methods of instruction, especially in reference to the term Total Communication. However, for purposes of the present study methodologies have been defined as follows:

1. Oral-Aural Method. In this method, the child receives input

through speechreading (lipreading) and amplification of sound, and expresses himself through speech. The use of signs and fingerspelling are not part of the educational process.

2. Rochester Method. This is a combination of the Oral-Aural Method plus fingerspelling. The child receives information through speechreading, amplification and fingerspelling, and expresses himself through speech and fingerspelling. When practiced correctly, the teacher spells every letter of every word in coordination with speech.

3. Total Communication. This approach, also known in this context as the Simultaneous Method, is a combination of the Oral-Aural Method plus fingerspelling and signs. The child receives input through speechreading, amplification, signs and fingerspelling. A proficient teacher will sign in coordination with the spoken word, using spelling to illustrate elements of language for which no signs exist.

Program administrators were not obligated to maintain any particular aspect of their programs for the duration of the research. They were simply requested to continue to provide what they considered to be the most effective program possible for hearing impaired children. This has presented some difficulty in classification because some programs have been in transition from one method or philosophy to another. However, it does enable the investigators to assess the effects of change, e.g., from an Oral to a Total Communication program or from a structured to unstructured

format at different age levels. The 1972-73 classifications by method are presented in the following section on Program Outlines.

In order to provide the reader with an account of the activities of children studied in the different programs, each supervising teacher was asked to submit a "sample day" representing a daily schedule typical of that followed by the children. The sample days for each program are presented, unedited, in Appendix A.

Program Outlines

American School for the Deaf

The American School is a public, residential school serving 501 pupils in preschool through 12th grade (387 residential, 114 day students). Seventy-four of the total school population are classified as multiply handicapped. The enrollment age ranges from 2 to 21 years. The preschool is situated in a building specifically designed for very young deaf children. The preschool program was Oral-Aural at the initiation of the project. It has since changed to the Total Communication method of instruction.

Callier Hearing and Speech Center

The Callier Hearing and Speech Center is a public day school with an enrollment of 115 pupils in preschool and kindergarten. There is no minimum age for admission. The five year old facility was designed to be a complete functional unit including educational, clinical and research divisions. (All children currently involved in this research began training in the Oral-Aural Method. As of Fall and Spring, 1973, five children in the sample are receiving instruction in Total Communication classes.)

Maryland School for the Deaf

The Maryland School for the Deaf is a public, residential facility serving 341 pupils (333 residential, 8 day students) in preschool through 12th grade. The minimum age at enrollment is four years with a maximum age of 19 years. Housing, dining facilities, gymnasium and classrooms for all the very young children are located in a two story building on the campus. The children at Maryland are being trained via Total Communication.

Children in the Maryland program are the only ones who have not been in the same nursery and/or preschool program over a period of time. All entered the Maryland School for the Deaf in September, 1971. Five had had preschool experience at the Easter Seal Society, the Gallaudet College preschool or a private preschool; one had been enrolled in a day care center for the retarded. One had been involved with the Maryland School for the Deaf parent counseling program.

Minneapolis Public School System

The Minneapolis School System is a public day program serving 212 pupils in preschool through 12th grade from the west metropolitan school districts of the Minneapolis/St. Paul metropolitan area. The enrollment ages range from 0 to 21 years. Most of the sample attend day classes for the deaf in two elementary schools. One of the younger children and his parents still remain involved in the parent-oriented preschool program in which the entire sample was originally enrolled. His training sessions are conducted in elementary school classrooms renovated into a homelike setting. The Minneapolis children in this project are trained using the Oral-Aural Method.

New Mexico School for the Deaf

The New Mexico School for the Deaf publically serves 200 pupils in Santa Fe and outlying preschool units. The 172 residential pupils are housed in Santa Fe along with 28 day students in preschool through 12th grade. The enrollment age ranges from 0 to 21 years. The Albuquerque program has 19 day students with ages ranging from 1 to 8 years. The Santa Fe preschool is located in the primary building while the Albuquerque preschool is a self-contained unit. All children in these preschools are trained with Total Communication.

Rochester School for the Deaf

The Rochester School for the Deaf is a public, residential school enrolling 281 students (115 residential pupils and 166 day pupils) in preschool through 12th grade. The enrollment age ranges from 3 to 19 years. The preschool program at the Rochester School is located in a building specifically designed for young deaf children. While the program was employing the Oral-Aural Method of communication at the onset of research, children in this program now receive instruction in the Rochester Method.

St. Paul Public School Program

The St. Paul program is a public day school enrolling 139 pupils from the St. Paul/Minneapolis east metropolitan area in preschool through 12th grade. The enrollment age ranges from 0 to 21 years. The preschool is located in five rooms of an elementary school. In 1970-71, all children received training via the Rochester Method. In 1971-72 the children in the project received either Total

Communication or Oral-Aural instruction, as decided by the staff. Three children are now integrated into regular classes under the supervision of the St. Paul program.

Selection of Subjects

At present there are 72 children in the project, all of whom have satisfied the following requirements:

1) Birthdate between March 1, 1966 and March 1, 1968
2) Sensori-neural hearing loss of 70 dB or greater in the better ear across the speech range
3) Leiter International Performance Scale of 80 or better
4) Age of onset of hearing loss of two years or younger
5) No other severe handicap in addition to the hearing loss

The primary source of pupil information has been cumulative record files. In spring 1973 the files were reviewed and information regarding most recent audiometric data and official confirmation of etiology and onset was gathered. Three children did not have quantitative audiograms and others had not been tested for bone conduction. The programs involved have been requested to obtain this vital data at the earliest possible date.

Complete data has been gathered on the children for three years in all of the programs except for eight subjects from the Maryland School for the Deaf, who entered the study in September, 1971. This year, one student moved to another state; one other has transferred to another school system. Five children were dropped from the study due to the presence of other handicaps which were interfering with educational progress.

The chronological ages of the 72 subjects ranged from 60 - 86 months, with a mean age of 73.43 months. Leiter IQ scores ranged from 85 to 157 with an overall mean of 116.57. With the exception of the children from the Maryland program and a few who were absent previously, all of the IQ scores were obtained in fall, 1970.

Audiometric data yielded a mean hearing loss of 93.19 for the 69 children with quantitative audiograms. The range is between 70 dB and 110 dB. Of the sample, 66 children (92%) have some type of hearing aid, either their own or one loaned to them by the school. This contrasts to a figure of 85% in the 1970-71 period and 88% for the 1971-72 period.

Nineteen pupils are currently living in residential schools; the remaining children attend day classes either in residential schools or speech and hearing centers. The mean number of hours spent in the classroom for the entire sample is approximately 22 hours per week, an increase over the past year.

Description of Subjects and Program Services

Data was gathered from March to June 1973. The order of visits was random except that a program visited first or last in 1971 or 1972 did not fall in the same position in 1973.

A summary of the sex, age, IQ and hearing loss by program is available in Table 1. t-test comparisons on the basis of age and hearing loss show no significant difference between programs. For IQ scores, the New Mexico subjects were significantly higher than those in Maryland ($t=3.14$, $df=15$, $p<.01$) and Rochester programs

(t=3.74, df=15, p<.01). The Callier subjects were higher than the Rochester subjects (t=2.93, df=24, p<.01).

The breakdown of the sample by etiology and age of onset of hearing loss may be found in Tables 2 and 3. Despite recent medical and diagnostic advances it is interesting to note that the Unknown Etiology category is the largest, accounting for almost 1/3 of the sample.

Data in the pupils' cumulative files indicate that by June 1972 eight children (the complete Maryland sample) had attended their present program for two academic years. For the other six programs, 33 children had been enrolled for three years, 24 for three to four years and seven for four or more years.

The number of class hours of instruction varies from program to program and also within some programs. Many more of the children are judged old enough to attend full day sessions. One child is still participating in a parent oriented program. The latter necessitates greater involvement on the part of the specific family and therefore allows for fewer hours of pupil-teacher interaction. The type of student (residential, etc.) and number of instruction hours by programs is presented in Table 4.

Tables 5 and 6 include a description of staff and supportive personnel and their qualifications which was provided by the supervising teacher and refers only to the personnel working with the present sample of children.

It should be stressed that the children in the present sample represent a subset of each program. Complete programs are not

described in detail. Most of the programs, for example, have children through high school age. The Callier, Minneapolis and St. Paul programs serve large numbers of children at the preschool age with mild and moderate hearing impairments. These children, of course, are not included in the study and the extent to which findings might generalize to them is unknown.

Table 1

Subjects Tested in 1973 by Chronological Age, IQ, Sex and Hearing Loss

	Number of Subjects	Sex M	Sex F	CA Mean in Months	Leiter IQ Mean	Hearing Loss Number	Hearing Loss Mean	Range
American School for the Deaf	9	7	2	72.33	117.56	6	85.00	70 - 103
Callier Hearing & Speech Center	17 (1)	13	4	72.50	120.28	17(1)	91.11	75 - 110
Maryland School for the Deaf	8	5	3	74.62	107.25	8	98.75	78 - 110
Minneapolis Public School System	14	12	2	73.71	112.64	14	92.14	75 - 110
New Mexico School for the Deaf	9	3	6	72.00	129.22	9	94.44	78 - 110
Rochester School for the Deaf	8	3	5	77.50	104.00	8	101.25	85 - 110
St. Paul Public School System	6	3	3	72.33	123.33	6	90.00	75 - 110
Totals	71(1)	47	25	73.43	116.57	68(1)	93.19	70 - 110

( ) indicates the number of children who were absent during the 1973 testing period.

Table 2

Etiological Diagnoses by Program

School	Heredity	Illness	Meningitis	Prematurity	Rh Factor	Maternal Rubella	Trauma at Birth	Unknown	Program Total
American School for the Deaf	6	0	1	0	0	1	0	1	9
Callier Hearing & Speech Center	1	0	3	1	0	5(1)	0	7	17(1)
Maryland School for the Deaf	4	0	1	0	0	1	1	1	8
Minneapolis Public School System	1	0	1	1	0	6	0	5	14
New Mexico School for the Deaf	1	1	1	1	0	1	0	4	9
Rochester School for the Deaf	2	2	1	0	0	0	0	3	8
St. Paul Public School System	0	0	2	1	1	0	0	2	6
Totals	15	3	10	4	1	14(1)	1	23	71(1)

( ) indicates the number of children who were absent during the 1973 testing period.

Table 3

Age of Onset by Program

Program	Present at Birth	Birth to 12 Months	12 Months to 24 Months	Unknown	Program Total
American School for the Deaf	7	1	0	1	9
Callier Hearing & Speech Center	11(1)	2	1	3	17(1)
Maryland School for the Deaf	7	1	0	0	8
Minneapolis Public School System	12	1	1	0	14
New Mexico School for the Deaf	4	0	2	3	9
Rochester School for the Deaf	3	2	0	3	8
St. Paul Public School System	3	0	2	1	6
Total	47(1)	7	6	11	71(1)

( ) indicates the number of children who were absent during the 1973 testing period.

Table 4

Administrative Organization of Services

	Residential Pupils		Day Pupils in Residential Schools or Hearing Centers		Pupils in Public School Classes for the Deaf		Pupil Integrated into Hearing Class		Parent Oriented Services	
	Children	hour/wk.	Children	hours/wk.	Children	hours/wk.	Children	hours/wk.	Children	hours/wk.
American School for the Deaf	5	23.75	4	23.75						
Callier Hearing & Speech Center			16	31.25			1	30.00		
Maryland School for the Deaf	8	32.50								
Minneapolis Public School System					8 4 1	31.25 16.25 15	4	15.00	1	4.00
New Mexico School for the Deaf	1	15.00	7 1	20.00 15.00						
Rochester School for the Deaf	4	25	4	25						
St. Paul Public School System					1 2	30.00 15.00	3	15.00		
Totals	18		32(1)		16		8		1	

( ) indicates the number of children who were absent during the 1973 testing period.

Table 5

Program Staff by Length of Time with Program and Previous Work Experience

Program	Number of Staff Members Working With Sample	Length of Time with Program			Previous Experience with Deaf or Normal children
		Under 2 years	2-5 years	Over 5 years	
American School for the Deaf	5	0	2	3	5
Callier Hearing & Speech Center	22	9	13	0	12
Maryland School for the Deaf	4	1	2	1	2
Minneapolis Public School System	13	3	9	1	12
New Mexico School for the Deaf	8	0	4	4	7
Rochester School for the Deaf	11	2	7	2	8
St. Paul Public School System	9	5	2	2	5

Table 6

Breakdown of Programs by Teachers, Supportive Staff, and Certification

Program	Teachers		Supportive Staff					Tutors or Resource Teachers	Total	Certified to teach the deaf			Bachelor or Teaching Certificate Only	MA Only
	Supervising	Regular	Social Workers	Psychologist	Occupational Therapists	Speech Therapist	Aides			BA/BS	MA	Ph.D.		
American School for the Deaf	1	4					0	0	5	2	2	0	1	0
Callier Hearing & Speech Center	1	12	1	1	0	0	5	2	22	9	3	0	3	1
Maryland School for the Deaf	1	3							4	0	1	1	0	
Minneapolis Public School System	1	11	0		0	2	0		13	3	7	0	2	1
New Mexico School for the Deaf	2	6	0		0	0	0	0	8	1	7	0	0	
Rochester School for the Deaf	1	4	0		0	3	3	0	11	2	3	10	3	2
St. Paul Public School System	2	4	0		1	1	1	0	9	2	5	1	1	

CHAPTER 4

RESULTS

Illinois Test of Psycholinguistic Abilities

The Illinois Test of Psycholinguistic Abilities (ITPA) was employed in this study. The model of the ITPA (Kirk, 1969; Paraskevopolis and Kirk, 1969) is three dimensional and contains (1) the channels of communication, including auditory and visual input and verbal (vocal) and motor response; (2) psycholinguistic processes, including reception, association and expression; and (3) levels of organization, including the automatic and representational levels. For the purposes of this study, only the following five visual motor subtests of the ITPA were administered to the sample population:

1) Visual Reception - measures the child's ability to gain meaning from visual symbols.
2) Visual Association - measures the child's ability to relate visually presented concepts.
3) Manual Expression - measures the child's ability to convey ideas manually.
4) Visual Closure - measures the child's ability to identify a familiar object from an incomplete pictoral presentation.
5) Visual Sequential Memory - measures the child's ability to replicate from memory, sequences of non-meaningful geometric figures.

It should be noted that the Manual Expression subtests is not related to any arbitrary system of manual communication utilized by

deaf individuals. Rather, it involves a child demonstrating appropriate actions, such as dialing a telephone or playing a guitar, when presented with visual stimulation.

Although all five subtests rely on the visual-motor channel, as previously noted, instructions are designed to be orally presented. Thus, additional instructional materials were devised to further assist the child in understanding the tasks when necessary. Instructions for all subtests were given in the mode of communication consistent with the methodology employed by each school.

In the standardization process, approximately 15% of the ITPA sample included children who were found to be non-testable. Similarly, each subject in the present study was eligible to receive a score regardless of refusal to participate or failure to obtain a basal on a particular subtest.

Results

The basic data consisted of scaled scores for 71 children on five ITPA subtests. Scaled scores are transformed raw scores such that at each age and for each subtest the mean or average performance of the standardization sample is 36, with a standard deviation of six. Scaled scores account for both group means and variances and provide a comparison of the child's performance.

For the present sample the total score for all 5 subtests averaged 180.03. As in 1972, this score is almost identical to the norm of 180 established for hearing children, again suggesting

that the children in this study are functioning normally in the visual-motor channel. ITPA scores for each program are summarized in Table 7. Average scores for the American School, Callier Center, New Mexico School and St. Paul Schools are above the mean for hearing children while the score for the Maryland School falls within a point of the hearing mean. Average scores for the Minneapolis and Rochester programs were below the mean.

Multiple t-tests were used to compare the total ITPA scores by program, etiology, hearing loss and methodology. No significant differences were found at the .01 level.

Longitudinal Comparisons

In 1971, inspection of the scores of the deaf subjects across the five visual motor subtests revealed a differential pattern of functioning for the deaf subjects as compared to their hearing counterparts. This pattern remained consistent for the 1972 data although scores on the Visual Reception, Visual Sequential Memory, Visual Association, and Visual Closure subtests regressed toward the hearing mean of 36.

Further regression has been noted in the 1973 test results. Figure 1 presents comparisons of ITPA scores by subtest for 1971, 1972 and 1973. The mean score on the Visual Sequential Memory subtest has dropped to the hearing mean of 36 while that of the Visual Association (35.22) has increased to within one point of the hearing mean. Visual Reception (34.84) and Visual Closure (33.87) scores have stabilized near the hearing mean. The deaf subjects

continued to maintain relatively higher scores on the Manual Expression (40.16) subtests. The sample score for this subtest differs significantly from the hearing mean ($t=7.855$, $p<.001$).

These data lend further support to the statement that subjects in the present sample function normally in the visual motor channel. Of great interest to the authors are the continued high scores in Manual Expression. Data gathered in the 1974 should indicate whether the data represent real superiority for deaf children in this area or whether regression toward the hearing mean will occur.

Table 7

Illinois Test of Psycholinguistic Abilities Mean Program Scores by Subtests

Program	Number of Subjects	Visual Reception	Visual Sequential Memory	Visual Association	Visual Closure	Manual Expression	Mean ITPA Score
American School for the Deaf	9	36.67	38.44	34.67	35.33	38.89	184.00
Callier Hearing & Speech Center	17	37.18	31.71	37.41	37.12	42.06	185.18
Maryland School for the Deaf	8	33.87	38.37	33.38	32.50	41.00	179.13
Minneapolis Public School System	14	33.79	36.43	35.43	28.64	38.21	172.50
New Mexico School for the Deaf	9	33.11	39.22	35.67	35.00	40.22	183.22
Rochester School for the Deaf	8	30.12	36.75	30.00	34.00	39.88	169.50
St. Paul Public School System	6	38.17	34.50	38.17	34.67	40.33	187.50
Totals	71	34.84[1]	36.00[1]	35.22[1]	33.87[1]	40.16[1]	180.03[1]

[1] weighted mean scores

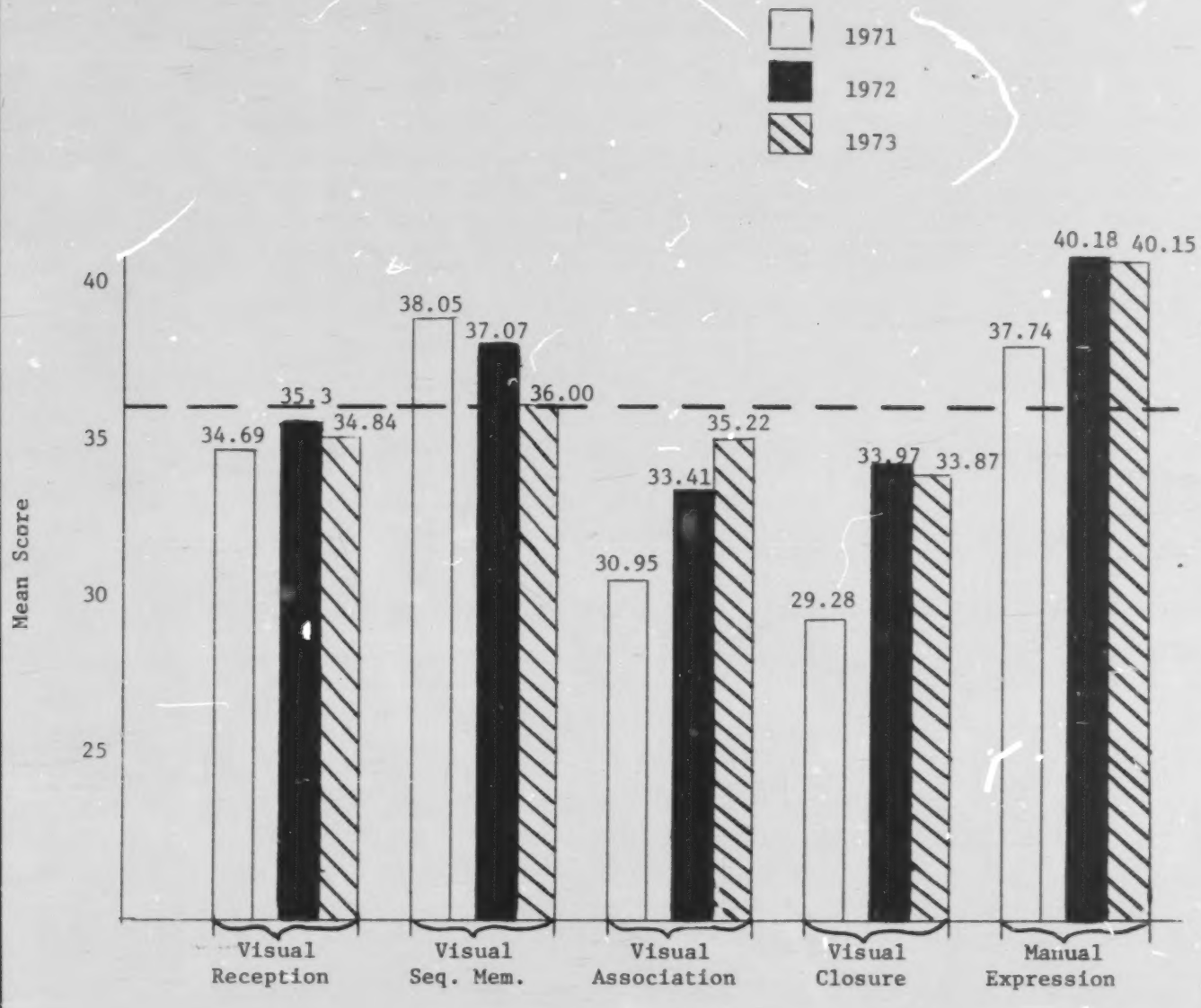

Figure 1

ITPA Subtest Scores
Obtained in 1971, 1972 & 1973

Metropolitan Readiness Tests (MRT)

In the spring of 1972 an assessment of academic readiness was begun on a pilot basis using four subtests of the Metropolitan Readiness Tests, Form B (Hildreth, et al. 1965) with children 5 1/2 years and older. These tests are designed to measure the extent to which children have acquired those abilities which contribute to success in first grade. The basic purpose, then, is to provide teachers with a quick and reliable instrument for assessing individual needs of children entering first grade.

The tests are considered primarily as diagnostic tools. An effective kindergarten program should facilitate the acquisition of skills measured by the MRT.

On the basis of pilot testing, the following subtests were included in the 1973 test battery:

Matching - attempts to tap visual-perceptual skills analogous to those implemented in discriminating word forms in beginning reading.

Alphabet - is intended to discern the ability to accurately recognize letters of the alphabet.

Numbers - is designed to take account of number concept skills, ability to manipulate quantitative relationships, recognize and produce number symbols and related knowledge.

Copying - evaluates combined visual-perception and motor control skills similar to those needed in handwriting acquisition.

The word meaning and listening subjects were not administered because pilot test results suggested that their reliance on verbal instructions tended to depress scores as a function of children's inability to understand the tasks. These difficulties were noted in all programs, regardless of methodology employed.

The four Metropolitan Readiness Tests were administered to 69 children. The overall mean for the four tests was 39.61 with mean program scores ranging from 31.13 to 44.67, as shown on Table 8. The mean sum of the four tests for the population of hearing children on which the test was standardized was 35.72. The overall sample mean and the average scores for six of the seven programs exceed this figure, thus suggesting essentially normal functioning on the four readiness measures used.

t-test comparisons between programs showed the scores for the Callier Hearing and Speech Center to be significantly lower than those from the American, New Mexico and Rochester Schools. The results are presented in Table 9.

In their discussion of the standardization of the MRT, Hildreth, et al. (1969) do not provide ages of the standardization subjects. The sample consisted of over 6,500 beginning first grade students (p. 15) so a chronological age of somewhat greater than 6-0 seems reasonable, thus making the mean age of the sample similar to those participating in the present study.

Examination of the performance of the 69 children on the individual tests reveal a difference in scores from that of the standardization sample. The sample of deaf children scored significantly higher:

Matching ($p < .001$) and Alphabet ($p < .001$). While their performance on the numbers test was significantly lower than that of the standardization sample (Table 10), the relatively poor performance on the numbers test may be due in part to the fact that all questions are presented verbally. In all schools, including those where signs and fingerspelling were added to the verbal presentation, it is possible that the results were confounded by receptive communication abilities of the children.

The superior scores of the deaf children in the American, Maryland, New Mexico and Rochester Schools suggest that, for these programs at least, preschool experiences have prepared deaf children in skill areas which contribute to readiness for first grade instruction.

Table 8

Metropolitan Readiness Tests Scores by Program

School	N	Matching $\bar{X}$	Matching sd	Alphabet $\bar{X}$	Alphabet sd	Numbers $\bar{X}$	Numbers sd	Copying $\bar{X}$	Copying sd	Total $\bar{X}$	Total sd
American School for the Deaf	9	10.55	2.40	15.78	.67	10.33	3.84	7.89	4.14	44.50	9.04
Callier Hearing & Speech Center	15	8.93	2.66	9.60	3.40	6.87	3.16	5.73	4.30	31.13	10.70
Maryland School for the Deaf	8	9.25	3.33	14.88	2.23	11.88	5.11	7.12	3.90	43.12	11.84
Minneapolis Public School System	14	9.43	3.13	9.71	4.86	9.57	3.96	9.64	2.90	38.36	11.62
New Mexico School for the Deaf	9	10.00	2.65	15.11	1.62	11.00	3.50	8.55	3.47	44.67	8.59
Rochester School for the Deaf	8	11.25	1.98	14.88	2.03	9.25	3.92	9.88	4.12	41.50	14.39
St. Paul Public School System	6	9.00	1.79	12.17	5.19	9.17	3.25	7.00	4.05	37.33	10.73
Total	69	9.70	2.69	12.59	4.16	9.46	3.98	7.86	3.86	39.61	11.03
Standardization Sample		7.49	4.04	9.39	4.70	12.02	4.70	6.82	3.88	35.72	

Table 9

Total Metropolitan Readiness Tests Scores
Significant Comparisons by Program

Comparison			t	df
American School for the Deaf	>	Callier Hearing and Speech Center	3.14*	22
New Mexico School for the Deaf	>		3.21*	22
Rochester School for the Deaf	>		3.29*	21

* $p < .01$

Table 10

Metropolitan Readiness Tests
Significant t-test Comparisons Between Sample
Mean and Population Mean by Tests

Test	t	df
Matching	6.8273***	68
Alphabet	6.3987***	68
Numbers	-5.3411***	68

***p < .001

Communication Battery

In response to the need for empirical tests of communication skills of young deaf children, three new tests were developed. The tests were designed to assess receptive, expressive, and articulation abilities.

The vocabulary for all three tests was selected from lists of words provided by teachers, which the children were judged capable of speaking, speechreading, or recognizing in print. Each child in the sample, therefore, was evaluated by his or her teacher and only the 50 words which occurred most frequently across all schools were selected for inclusion in the communication battery vocabulary. Approximately one month in advance of the testing date for each program, the list of 50 words was sent to the school so that the teachers could review or practice any unfamiliar words with the children. This procedure was developed to lessen the chances of any test being one of vocabulary alone rather than one of other communication abilities. In 1972, following field testing, the receptive communication and articulation tests were judged to be in a stage suitable for use in testing situations. These tests, with some modifications, were used in the 1973 test battery. Validation of the instruments is continuing.

The expressive communication test was not judged to be at a point of development justifying its use as an assessment tool in 1972. It was therefore administered experimentally to the children in 1972 and used in revised form in 1973.

Receptive Communication Scale

The receptive communication test was developed to assess five different but not mutually exclusive modes of communication; 1) sound alone, 2) sound plus speechreading, 3) sound and speechreading plus fingerspelling, 4) sound and speechreading plus signs and 5) the printed word. Number 1 is similar to the Auditory Method; number 2 to the Oral Method; number 3 to the Rochester Method and number 4 to Total Communication. The authors did not investigate reception of speechreading, fingerspelling or signs alone. The object rather was to test the children under close to normal pedagogical conditions used with the deaf. Those conditions always include the spoken word.

Working from basic vocabulary lists provided by teachers in the programs, 25 items representing five levels of difficulty were developed. Five of the items tested number concepts, five tested adjective-noun phrases, five tested noun-conjunction-noun phrases, five tested noun-verb-prepositional phrases, and five tested noun-verb constructions. The noun-verb constructions were added to the 1973 test battery. For each of the 25 correct items three additional multiple choice foils were constructed. Alternate choices were balanced in matrix form so that children would have to receive an entire phrase rather than part of it in order to make a correct response. The position of the correct choice was randomly determined on each page for each of the 25 items. A sample page is found in Appendix B.

The 25 stimuli were randomly assigned to one of five

groups, each of which contained one item from every level of difficulty, enabling administration of any one of the five groups in any one of the five modes of communication. A sample card was constructed to assist and/or train the child before each new mode of communication was introduced. To emphasize the change in mode, the same training card was always used.

The Callier and Minneapolis programs requested that neither sign language nor fingerspelling be used in testing their oral students. These modes were employed with Callier students enrolled in Total Communication classes. The Rochester School requested that signs not be used. These requests were honored. Children in the Callier and Minneapolis programs were given three Sound plus Speechreading tests and children in the Rochester program received two Sound and Speechreading plus Fingerspelling administrations. Table 11 illustrates the modes of communications employed by each program.

Results

The basic data consisted of the per cent correct for each mode as well as the total per cent correct on all 25 items for each subject. Table 12 presents the average scores by mode and program. Arcsin transformations (Winer, 1962) were applied to the data before the statistical analysis to minimize difficulties inherent in using proportional data.

It should be noted that four children in Callier's Total Communication classes were not included in any analyses; consequently,

Table 11

Modes of Communication by Program for the Receptive Communication Scale

Programs	Number of Sound Alone Items	Number of Printed Word Items	Number of Sound Plus Speechreading Items	Number of Sound & Speechreading Plus Fingerspelling Items	Number of Sound and Speechreading Plus Sign Items
American School for the Deaf	5	5	5	5	5
Callier Hearing & Speech Center					
(Oral Pupils)	5	5	15	0	0
(Transitional Pupils)	5	5	5	5	5
Maryland School for the Deaf	5	5	5	5	5
Minneapolis Public School System	5	15	15	0	0
New Mexico School for the Deaf	5	5	5	5	5
Rochester School for the Deaf	5	5	5	10	0
St. Paul Public School System	5	5	5	5	5

Table 12

Per Cent Correct on Receptive Communication Scale by Program and Mode of Communication

Program	N	Sound Alone	Printed Word	Sound & Speech-reading	Sound & SR & Finger-spelling	Sound & SR & Signs	Total % Correct
American School for the Deaf	9	31	64	62	76	91	65
Callier Hearing & Speech Center (Oral Pupils Only)	13	38	48	73	--	--	61
Maryland School for the Deaf	8	38	63	65	63	85	63
Minneapolis Public School Program	14	59	47	65	--	--	61
New Mexico School for the Deaf	9	31	69	62	67	87	64
Rochester School for the Deaf	8	45	60	48	68	--	59
St. Paul Public School Program	6	63	47	67	80	80	69
Totals N	67	67	67	67	40	32	67
$\bar{X}$		43	56	63	72	86	62
σ		25	28	29	30	30	20

their scores are not reflected in this program's overall scores. The children had been receiving instruction in the Total Communication mode for a three week to three month period. Their scores suggest that they represent students who were not progressing successfully in the Oral-Aural program. Because of this brief enrollment these four subjects will be considered transitional pupils. Their average scores are as follows:

Printed Word	25%
Sound Alone	45%
Sound plus Speechreading	20%
Sound and Speechreading plus Fingerspelling	35%
Sound and Speechreading plus signs	60%
Total	37%

Examination of Table 12 suggests that, in accordance with the findings of the 1971-72 Report, scores improve as dimensions are added. If the printed word scores are considered separately because they do not involve direct person to person communication, scores improve from sound alone (43%) to sound plus speechreading (63%)to sound and speechreading plus fingerspelling (72%) to sound and speechreading plus signs (86%). The overall receptive accuracy is 62%.

The five modes of communication were examined to determine if a statistically significant hierarchy of difficulty existed. Analysis by t-test, as shown on Table 13, indicates that sign language was significantly easier (larger per cent correct) than the printed word, sound alone, speechreading and fingerspelling while fingerspelling and speechreading were significantly easier than sound alone. Table 14 shows the increase of scores on receptive communication from 1972 to 1973.

Table 13

Receptive Communication Scale - Significant Comparisons between Modes of Communication

Comparison			t	df
Sign Language	>	Fingerspelling	2.96*	70
Sign Language	>	Speechreading	4.82**	97
Sign Language	>	Printed Word	5.02**	97
Sign Language	>	Sound Alone	8.36**	97
Fingerspelling	>	Sound Alone	4.49**	132
Speechreading	>	Sound Alone	5.09**	95

* $p < .01$

** $p < .001$

Table 14

Receptive Communication Subtest
Percentage Scores Obtained in
1972 and 1973

Subtest	1972	1973
Sound Alone	34	43
Printed Word	38	56
Sound and Speechreading	56	63
Sound and Speechreading and Fingerspelling	61	72
Sound and Speechreading and Signs	72	86
Total Percent Correct	50	62

The analysis of the data by programs using t-test comparisons revealed no significant differences across modes or by total score at the .01 level of probability.

Analysis of the children by the extent of hearing loss was done in the following manner. All children with audiograms were rank ordered from most residual hearing to least residual hearing. This entire sample was then divided into halves and into quarters. The initial comparison was between children with 70-100 dB losses (upper 1/2). No significant difference was found between children with more residual hearing and those with less hearing. There were also no significant differences between children with losses from 70-88 dB (top 1/4) and those with losses between 106 and 110 (bottom 1/4). A Pearson product moment correlation of .30 was obtained between hearing loss and receptive communication. The correlation between the Receptive scores and hearing loss was .61 for children in oral programs and only .09 for children in combined programs (Rochester Method and Total Communication) thus suggesting that receptive abilities are more highly related to hearing loss in oral programs.

Expressive Communication Scale

In addition to the articulation portion of the battery, a communication scale was developed to assess expressive language abilities. Twenty-five pictures were selected from the alternate foils of the receptive communication scale representing five levels of linguistic difficulty: number concepts, adjective-noun phrases,

noun-conjunction-noun phrases, noun-verb, and ... erb-prepositional phrase constructions. (Appendix C)

Prior to testing, a training period was conducted. Each child was encouraged to provide as complete a description of a demonstration item as possible. Questions were directed to the subjects concerning the contents and meaning of the demonstration item in an effort to stimulate descriptive communication. The twenty-five pictures were then presented in random order, each for a ten second duration. Each child was encouraged to comment on the picture in his preferred mode of communication. Sessions were tape recorded and video taped for later review.

Three groups of raters were employed to observe the video tapes To account for differences in communication approaches and skills, these selected groups were comprised of five Interpreters, five Deaf Adults, and six Graduate Students in Special Education who were unfamiliar with Manual Communication. All sixteen raters were instructed to write what they thought each child was communicating; they were further instructed to indicate the mode(s) of communication employed in each picture description. The tapes were later viewed and transcribed.

For purposes of the present report, analysis of the tapes will be limited to a discussion of intelligibility. A more detailed analysis of grammatical constructions employed by the children will be published in a supplementary report. While improvements have been made in the 1972 measure, the expressive communication scale is still considered to be in an experimental stage. Work is continuing to further revise and improve its content and format.

Table 15

Expressive Communication Scores by School

School	N	Mean % Correct	Standard Deviation	Range
American School for the Deaf	9	40.33	13.84	9 - 56%
Callier Hearing and Speech Center	17	39.29	14.28	19 - 58%
Maryland School for the Deaf	8	48.37	8.03	35 - 58%
Minneapolis Public School System	14	25.36	14.97	10 - 65%
New Mexico School for the Deaf	9	49.66	9.51	36 - 63%
Rochester School for the Deaf	8	26.00	11.76	17 - 50%
St. Paul Public School System	4	42.50	13.20	28 - 60%
Total	69	37.63*	15.34	9 - 65%

*weighted mean

Results

The basic data consisted of the percentage of words correctly identified by all sixteen raters for each child. A summary of these intelligibility ratings by school is found in Table 15.

Raters correctly identified 38 per cent of the expressive attempts for the 69 children. By groups, Interpreters achieved 47 per cent correct, while the Deaf Adults and Graduate Students achieved 35 per cent and 32 per cent correct respectively. Per cent correct for individual children ranged from 9 to 65 per cent. Comparisons by t-test show the New Mexico School for the Deaf and Maryland School for the Deaf to be significantly superior ($p < .01$) to the Rochester School for the Deaf and the Minneapolis program.

Articulation

The articulation portion of the Battery was composed of ten one and two syllable words. They were as follows:

apple	top
bird	fish
cat	milk
dog	red
eye	shoe

Each word was presented individually by means of a colored, 5 by 7 inch illustration. Upon presentation the subject was instructed to repeat each word after the examiner until it was determined that his or her best attempt at that word was recorded onto a Tandberg 4000X stereo tape recorder. If the child did not offer the word spontaneously, the examiner again presented the word for a more

accurate imitation. Although every means available was used to obtain an utterance for each of the ten words, some children did not repeat all words.

The complete list of words to be used was sent to the schools one month in advance of the test data to enable teachers to review or practice any unfamiliar words. The test, therefore, was one of the child's ability to articulate words he knew and not a test of his ability to imitate unfamiliar speech produced by others.

A method of recording the subject's responses on one channel of the stereo tape recorder and the examiner's voice on the other had been devised. Occasionally the complexity of the method resulted in a loss of words. Without this system, however, many more words would have been eliminated in the subsequent editing process because of the contiguity of examiner and child utterances.

To prepare the tapes for judging by raters, each child's best attempt at the ten words, as judged by the examiner, was recorded onto a compatible high quality machine. In this way responses for children from one program were randomly mixed with children from all other programs. The resulting tape was then played for two groups of raters, all of whom were participants in a class on language and deafness at the University of Minnesota.

The first group of 10 raters heard the tape from beginning to end. To eliminate any order effects, the second group of nine heard the end, middle and beginning of the tape respectively. All raters had been briefly exposed to deaf speech during their participation in the language class. However, only four raters

were familiar with the speech of deaf children; two of these raters participated in the first session, while the other two participated in the second session. The raters were presented with a list of 25 words (Appendix D) and instructed to select the words uttered by the subjects from this list. If they were unable to determine a word, they were encouraged to guess.

Subjects were introduced by first name and subject number. Their ten utterances were then presented, each followed by a five second pause during which the raters recorded their responses on the form provided.

Scores on this measure consist of the percentage of correct identifications by raters for each of the 71 children. The word most readily identified was "apple" (63%), followed by "eye" (38%). The words "cat" (21%) and "top" (19%) were identified with the greatest difficulty. As previously mentioned, some words were lost in the editing process. Consequently, the number of words spoken by each child ranged from seven to ten. The tape contains a total of 695 words; the distribution of words is listed in Table 16 which also summarizes scores by program. The overall accuracy across all seven programs was 31%. The Minneapolis (52%) and St. Paul (49%) programs received the highest scores, while the remaining five programs scored considerably lower with scores ranging from 19% to 26% (Table 17).

To minimize problems inherent in proportional data, arcsin transformations again were applied to the data for all statistical analysis. Program comparisons employing the t-test revealed

Table 16

Distribution of Words on Articulation Tape

Apple = 70	Fish = 70
Bird = 69	Milk = 68
Cat = 70	Red = 66
Dog = 67	Shoe = 68
Eye = 68	Top = 69

Table 17

Articulation Scores - Percentage of Correct Identification by 19 Raters Across Programs

Program	N	Apple	Bird	Cat	Dog	Eye	Fish	Milk	Red	Shoe	Top	Total	Range
American School for the Deaf	9	55	24	5	25	30	6	21	22	22	16	23	1 - 70
Callier Hearing & Speech Center	17	47	23	16	33	45	23	18	15	19	21	26	3 - 85
Maryland School for the Deaf	8	44	25	2	13	28	17	15	30	15	3	19	7 - 50
Minneapolis Public School System	14	76	39	52	57	55	55	64	43	44	38	52	5 - 80
New Mexico School for the Deaf	9	65	34	11	19	23	28	25	19	20	11	26	1 - 90
Rochester School for the Deaf	8	73	20	10	10	26	9	7	17	11	14	20	13 - 33
St. Paul Public School System	6	94	58	41	53	43	45	51	51	45	9	49	13 - 82
Totals	71	63	31	21	31	38	28	28	26	26	19	31	1 - 90

significant differences between the Minneapolis Program and the American School for the Deaf, Callier Hearing and Speech Center, New Mexico School for the Deaf and the Rochester School for the Deaf ($p < .05$). The St. Paul program was significantly higher than the Maryland School for the Deaf and the Rochester School for the Deaf ($p < .05$), (Table 18). Comparisons on the basis of methodology yield significant differences between Oral programs and Total Communication programs ($p < .05$) (Table 19).

This is the first section in which differences at the .05 level have been accepted as significant. In the past .01 has been the acceptable level. Although mean scores between the top two programs (Minneapolis, 52%, St. Paul, 49%) and the bottom two programs (Rochester, 20%; Maryland, 19%) were great, differences did not reach the .01 level because of the great individual variation within programs.

It was hypothesized that there would be a strong relationship between articulation scores and hearing loss. A Pearson product moment correlation of .58 ($p < .001$) between articulation scores and hearing loss confirms this hypothesis.

This measure was administered in 1972 as well as in 1973. However, the raters were different in the two years and the authors do not believe that a treatment of comparative scores across the two years would provide reliable information. Because of a lack of consistency among raters from year to year no longitudinal comparisons have been made.

Table 18

Significant t-test Comparison on
Articulation Scores by Program

Comparison		t	df
Minneapolis Public Schools	> American School	2.4625*	21
	> Callier Center	2.4145*	29
	> Maryland School	2.7931*	20
	> Rochester School	2.6861*	20
St. Paul Schools	> Maryland School	2.3736*	12
	> Rochester School	2.4166*	12

*p < .05

Table 19

Significant t-test Comparisons on Articulation Scores by Methodology

Comparison		t	df
Oral	< Total Communication Programs	2.0766*	56

*p<.05

Cognitive Development Measures

Barbara J. Best, Ph.D.

During the 1971-72 Preschool Evaluation, the request was made by several of the participating schools to include some measure of the children's cognitive development. Thus, the following measures were devised and pilot tested in the fall of 1972.

During the period between the ages of five and seven, children's thinking matures in several ways. For example, as the child grows older, his thinking tends to become more reversible, less egocentric, more decentrated, etc. Three Piagetian measures, appropriate for children within the range of five to seven, were chosen in order to measure these changes. The correct solution to each task depends upon the maturity of the child's thinking skills, but also draws on different types of experience and thus a child's performance should be affected by deafness in different ways.

The first task used was a measure of classificatory development in which the children were required to sort certain materials into suggested classes. There were two parts to this task, one involving the sorting of beads, and one involving the sorting of pictures. Correct solution to the beads task required the children to sort the beads on the basis of shape. Correct solution to the picture task required that the children sort the picture cards into the classes--animals, toys, people, household goods.

The second task was a measure of the development of conservation, in this case, conservation of number. The children were first trained to respond to equality or inequality between two groups of blocks.

The blocks were then manipulated in several ways, including rotation, adding equal numbers of blocks to each group, expanding one group, dividing one group into three subgroups, and collapsing one group. Children who understood the concept of conservation made judgments of equality between the two groups despite the manipulations.

The third task used was a measure of seriation ability. Children were first given ten sticks, differing from each other in length by 1/2 inch, and were asked to pick out the smallest and the largest sticks from the group. The three smallest sticks were then used to construct an example series for the child who was asked to copy the example. After the child succeeded in constructing the example, he was asked to construct a series using five and then ten of the sticks, and to insert three new sticks into his completed ten-stick series.

These particular measures were chosen because they tap all of the important changes in cognitive development, as outlined by Piaget which take place during the years from five to seven. It has also been argued that the child's cognitive development is related to his school achievement, an argument that is in need of testing. Thus, the purpose behind the creation of these measures was to attempt to differentiate the effectiveness of the various programs involved on some measure other than language and academic skills, and to determine whether or not there is a relationship between cognitive development and the child's academic achievement.

Results

These measures of cognitive development were administered to

68 children in the preschool study. The results of each test can be seen in Table 20. The overall mean total score was 28.74, with a range of 26.40 to 33.44. t-tests were run to compare all schools on each measure.

On the Classification subtest, there were no significant differences between the schools at the .01 level. The Conservation subtest showed one difference between the schools. Rochester performed significantly better than did the Callier subjects. On the Seriation subtest, there were again no significant differences among any of the schools. Finally, in terms of total scores, Rochester subjects did significantly better than did Callier subjects.

It can be seen in Table 20 that, overall, Rochester School subjects perform consistently well. These subjects, however, have the benefit of Piagetian curriculum materials which are used in the classroom regularly. It is likely that the effects of these curriculum materials which are used in the classroom regulary is what is being observed here. Subjects from Callier, on the other hand, perform consistently on a lower level; an explanation for these results is not readily apparent.

Since it remains questionable what relationship these tests have to school performance, correlations were run between the cognitive development measures and the MRT scores. The results of this analysis can be seen in Table 21. It can be seen that all measures of cognitive development are positively correlated with all measures of the Metropolitan Readiness Tests. The conservation subtest, and

Table 20

Cognitive Development Scores by Program

School	N	Classification $\bar{X}$	Classification sd	Conservation $\bar{X}$	Conservation sd	Seriation $\bar{X}$	Seriation sd	Total $\bar{X}$	Total sd
American School for the Deaf	9	5.72	1.20	13.78	3.15	8.11	2.20	27.61	4.20
Callier Hearing & Speech Center	15	5.47	.79	12.53	3.74	8.40	2.72	26.40	5.77
Maryland School for the Deaf	8	5.56	1.42	13.75	4.37	8.75	2.49	28.06	7.05
Minneapolis Public School System	13	5.88	1.47	14.69	3.86	8.31	3.15	28.88	6.00
New Mexico School for the Deaf	9	5.22	1.25	15.78	4.49	8.00	2.40	29.00	7.47
Rochester School for the Deaf	8	6.56	1.40	18.00	2.07	8.88	2.53	33.44	3.27
St. Paul Public School System	6	5.00	.84	16.17	2.71	9.00	2.45	30.17	4.48
Total	68	5.65	1.24	14.65	3.88	8.44	2.54	28.74	5.85

Table 21

Pearson Correlation Coefficients:
Cognitive Development Measures with Metropolitan Readiness Tests

	Classi-fication	Conser-vation	Seria-tion	Cognitive Total	Matching	Alphabet	Numbers	Copying
Classification								
Conservation	.2671							
Seriation	.1571	.3848**						
Total Cognitive	.4570**	.8876**	.7230**					
MRT - Matching	.2495	.4104**	.2949	.4533**				
MRT - Alphabet	.0843	.3130*	.0850	.2629	.4146**			
MRT - Numbers	.0228	.4135**	.3556*	.4339**	.4182**	.5217**		
MRT - Copying	.3867**	.4787**	.3592*	.5556**	.4815**	.3023	.3788**	
MRT - Total	.2350	.5336**	.3575*	.5592**	.7184**	.7713**	.7915**	.7152**

* $p < .01$
** $p < .001$
N = 68

the total cognitive score would appear to be the best predictors. However, it must be remembered that correlations do not imply causality and while it seems probable that there are certain common factors in a child's cognitive development and academic achievement, experimental research must be completed before any causal lines can be drawn.

Matching Familiar Figures Test

The Matching Familiar Figures Test (MFF) is a series of visual discrimination tasks designed to measure reflection-impulsivity. This dimension describes a tendency to consistently display slow or fast decision times in problem solving situations with high response uncertainty. It has been used to predict success or failure in the acquisition of reading skills (Kagan, 1965).

The test is comprised of twelve items, each consisting of a picture of a familiar object (the standard) and six similar alternate choices, one of which is identical to the standard. Each child is instructed to select the identical picture from the six alternate choices. He is permitted six trials to select the correct picture. Presentation of the standard and alternates occurs simultaneously with [illegible] of the selection process. A sample page of the MFF is presented in Appendix E. A stop watch is used to record time from the initial exposure of stimuli to the first selection; time is recorded to the nearest tenth of a second. The variable scores are the total number of errors and the average response time to the first selection.

Kagan (1965) reports correlations between average time and

errors ranging between -.30 to -.60. Stability of the reflection-impulsivity dimension has been noted over a period as long as 20 months.

The MFF has been used by Kagan to identify reflective and impulsive children. Reflective children are those whose response time is above the median, and error score below the median. Those classified as impulsive score above the median on errors and below it on response time.

Results

The test was administered to 70 of the 72 children in the sample. One child was absent and one child refused to complete the test. A significant Pearson product moment correlation between average time and errors of -.31 ($p < .01$) was obtained. This is within the range of correlations reported by Kagan. The mean response time across all children was 8.5 seconds per item with a mean error score of 1.66 per item.

Using Kagan's criteria, 22 reflective and 22 impulsive children were identified. These two groups did not differ significantly on the basis of sex, IQ, age, etiology, or program. Since the MFF has been used previously in reading research, t-test comparisons were made between the scores of the reflective and impulsive children for those measures designed to evaluate pre-reading or reading skill, i.e., the Copying, Matching and Alphabet portions of the MRT and the Printed Word subtest of the Receptive Communication Scale.

It was hypothesized that the scores of the reflective children for these variables would be superior to those of the impulsive

children. Significantly higher scores were achieved on the Matching Test ($t = 4.6098$, $p < .001$), and Copying Test ($t = 3.6596$, $p < .001$). However, scores did not differ significantly on the Alphabet Test or the Printed Word subtest.

Similarities between the MFF and the layout and timing of some ITPA subtests suggested the need for further comparisons between the performances of reflective and impulsive children on the five ITPA subtests. Reflective children were found to be significantly superior on only one subtest - Visual Closure ($t-2.7194$, $p < .01$).

The three tests (Copying, Matching and Visual Closure) on which the reflective and impulsive children differ significantly are all timed measures. It may therefore be the ability to function well on a timed test rather than superiority of pre-reading or reading skills that differentiate reflective and impulsive children.

Classroom Observation

During visitations to each of the seven programs participating in the study, observations were made in those three classes containing the largest number of children in our sample. Using a prescribed format, observers recorded the type of activity along with the employed mode of communication for the 45 minute observation period.

Equipment and educational materials in use, or contained within the classroom were noted on the observation form listing items commonly found in pre-primary and primary programs. A modified version of Di Lorenzo's (1969) Classroom Observation Schedule with additions appropriate to a population of deaf children was used.

While no content changes were made, the format employed in 1972 was further revised to expedite the recording and analysis process for the present year (Appendix F).

Following each observation period, statements were rated on a seven point scale (never to frequently observed) under seven major categories:

1) Classroom Organization encompassed program organization and implementation on an individual and group basis.
2) Discipline and Classroom Relationships addressed the manner in which any behavioral differences were handled or circumvented. The general classroom disposition was also noted.
3) Structuring Program focused on the relevant use of special materials and implementation of instructional goals and objectives.
4) Encouraging Language and Speech Development pertained to the various method(s) employed to foster speech and language growth within the classroom e.g., discussion periods, controlled practice, planned exposure to concepts.
5) Reaction to Pupil Needs concerned the teachers' recognition and assessment of individual impairments and needs, as well as his ability to effectively adapt the curriculum to the developmental status of each student.
6) Communication Analysis. The various modes of communication employed in the classroom by the teacher, support staff and child (child to child, child to teacher, teacher to child were also rated on a seven point scale. For the current

analysis, this segment of the observation was condensed and presented in table form for rating.

Results

All ratings under the above headings were combined across raters and compared between programs and modes of communication.

Consistent with findings of the past two years, the amount of equipment and materials available to teachers in all classrooms was extensive. An increase in the presence of academic materials was also noted due to the children's move into the early primary grades. One of the various types of auditory units was housed in each classroom observed, some of which could be used by the subjects outside of the classroom setting. Only five teachers of the 35 observed this year were included in last years observations.

The raw data were the combined scores of two raters across three observations for each program. Initial t-test computations revealed no significant differences in the categories of Reacting to Pupil Needs and Discipline and Classroom Relationships.

In the category of Classroom Organization, the New Mexico School was significantly higher than the American and Maryland Schools, the Callier Center and Minneapolis and St. Paul Public School Program as indicated in Table 22.

Statements rated on Program Structure revealed that the American, New Mexico and Rochester Schools were all significantly higher than the Maryland School and the St. Paul Program.

In the category of Encouraging Language and Speech Development,

Table 22

Classroom Observation Schedule

Significant Comparisons by Category and Program

Classroom Observation Schedule Category				t	df
Classroom Organization:	New Mexico School	>	American School	3.29*	52
		>	Callier Center	3.24*	52
		>	Maryland School	3.40*	52
		>	Minneapolis Program	3.35*	52
		>	St. Paul Program	2.77*	52
Structuring Program:	American School	>	Maryland School	2.70*	46
		>	St. Paul Program	3.24*	46
	New Mexico School	>	Maryland School	3.97**	46
		>	St. Paul Program	4.24**	46
	Rochester School	>	Maryland School	4.86**	46
		>	St. Paul Program	4.87**	46
	Rochester School	>	Minneapolis Program	3.19*	22
		>	St. Paul Program	3.04*	22
	New Mexico School	>	St. Paul Program	2.84*	22

* $p < .01$
** $p < .001$

the Rochester School was significantly higher than the Minneapolis and St. Paul Public School Programs and the New Mexico School was significantly higher than the St. Paul Program.

t-test comparisons were made on the total observation scores for each program. Significant comparisons are summarized in Table 23. The New Mexico School scores were significantly higher than the Callier, Maryland, Minneapolis and St. Paul programs. The American School was higher than the St. Paul Program.

Communication Analysis

The degree and mode in which children communicated with each other and with their teachers were rated on a seven point scale from "never" to "frequently". Inspection of Table 24 reveals that there is a range in the amount of observed interaction between children within programs from 13.40 (Callier-Oral) to 20.83 (American School). Sign language is the most frequently used means of communication for the sample as a whole. Written communication between children was not observed in any program.

Child to Child

At the American, Maryland, New Mexico Schools and the St. Paul Program, Signs were the most common mode of communication between children. The second highest score for the American and Maryland schools was found in the Combined category (the simultaneous use of Signs and Fingerspelling and Oral-Aural communication) while the category in secondary position in the New Mexico school was Oral-Aural and in the St. Paul program was Gestures. Oral-Aural

Table 23

Significant Comparisons on the Total Classroom Observation Schedule Score by Program

Comparison			t	df
New Mexico School for the Deaf	>	American School for the Deaf	3.33*	109
	>	Callier Hearing and Speech Center	5.04**	109
	>	Maryland School for the Deaf	4.78**	109
	>	Minneapolis Public School System	5.01**	109
	>	St. Paul Public School System	5.94**	109
Rochester School for the Deaf	>	Callier Hearing and Speech Center	2.80*	109
	>	Maryland School for the Deaf	3.01*	109
	>	Minneapolis Public School System	2.90*	109
	>	St. Paul Public School System	3.92**	109
American School for the Deaf	>	St. Paul Public School System	2.83*	109

* $p < .01$
** $p < .001$

Table 24

Classroom Observation Ratings of Communication Modes by Program

Program		Communication Child to Child: Fingerspelling	Sign	Oral-Aural	Combined	Written	Gestures	TOTAL
American School for the Deaf		3.33	6.00	3.33	4.67	1.00	2.50	20.83
Callier Hearing & Speech Center	(Oral)	1.00	2.50	3.75	1.00	1.00	4.25	13.50
	(TC)	1.00	5.00	3.00	3.50	1.00	5.00	18.50
Maryland School for the Deaf		2.50	7.00	2.17	4.17	1.00	2.67	19.51
Minneapolis Public School System		1.00	1.00	5.00	1.00	1.00	4.17	13.17
New Mexico School for the Deaf		1.33	5.50	5.00	3.33	1.00	3.00	19.16
Rochester School for the Deaf		3.50	1.83	2.67	2.50	1.00	4.33	15.83
St. Paul Public School System		1.33	5.00	2.00	4.17	1.00	4.83	18.33
TOTAL		20.66	33.83	26.92	24.34	8.00	30.75	

communication followed by gestures was observed most frequently in the Minneapolis Program. The children in the Oral classes at Callier and children from the Rochester School used gestures most, followed by Oral-Aural communication. The total communication children at Callier used signs as frequently as gestures when communicating with their peers.

Child to Teacher

Examination of Table 25 reveals a different pattern when the communication shifts to child-teacher interactions. Child-teacher communication was observed most frequently in the American School (22.65) and least frequently in Minneapolis (12.83). Overall, the most common means of child-teacher communication is Oral-Aural followed by Sign Language. The written form was observed only in the American, Rochester and St. Paul schools. The most common categories by program were: American, Signs and Combined; Callier (Oral classes), Oral-Aural and (Total classes), Gestures; Maryland, Signs and Combined; Minneapolis, Oral-Aural and Gestures; New Mexico, Oral-Aural and Signs; Rochester, Oral-Aural and Gestures; and St. Paul, Signs and Combined.

Teacher to Child

Teacher-child communication was observed most frequently in the American School (25.66) and least frequently in the Minneapolis Program (14.00). The Oral-Aural method, followed by signs, was the most frequently employed modes in teacher-child communication.

The most commonly used means of communication across programs

Table 25

Classroom Observation Ratings of Communication Modes by Program

Program		Communication Child to Teacher						
		Fingerspelling	Sign	Oral-Aural	Combined	Written	Gestures	TOTAL
American School for the Deaf		3.33	6.00	3.66	4.83	2.00	2.83	22.65
Callier Hearing & Speech Center	(Oral)	1.00	1.25	5.00	1.00	1.00	3.75	13.00
	(TC)	1.00	4.00	3.50	2.00	1.00	5.50	17.00
Maryland School for the Deaf		2.50	7.00	2.17	4.17	1.00	2.67	19.51
Minneapolis Public School System		1.00	1.00	5.50	1.00	1.00	3.33	12.83
New Nexico School for the Deaf		2.33	5.33	6.00	4.33	1.00	2.33	21.32
Rochester School for the Deaf		3.00	1.17	4.17	2.50	2.00	3.50	16.34
St. Paul Public School System		2.33	5.00	3.67	4.67	1.17	2.33	19.17
TOTAL		16.49	30.75	33.67	24.50	10.17	26.24	

were: American School, Signs, Oral-Aural, Combined; Callier Center (Oral), Oral-Aural and Gestures, (Total Communication) Sign and Gestures; Maryland School, Signs and Combined (equally employed); Minneapolis System, Oral-Aural and Gestures; New Mexico School, Oral-Aural and Sign: Rochester School, Fingerspelling and Combined; St. Paul System, Combined and Signs (Table 26).

By program category, teachers in Rochester spelled most frequently. At Callier, teachers of children in Total Communication classes sign most often. The Oral-Aural means was used most in Minneapolis while St. Paul employed the simultaneous oral-manual method most frequently. Rochester write and Callier (Total) gestured most frequently.

In five of the seven schools the two most frequently observed categories, were identical across the three types of classroom interaction (Table 27). Perhaps this is indicative of an emerging communicative style within the various schools. (The implications of these patterns will be examined in the discussion section.)

Table 26

Classroom Observation Ratings of Communication Modes by Program

Program		Communication Teacher to Child: Fingerspelling	Sign	Oral-Aural	Combined	Written	Gestures	TOTAL
American School for the Deaf		3.83	6.00	5.50	5.50	2.00	2.83	25.66
Callier Hearing & Speech Center	(Oral)	1.00	1.00	6.25	1.00	1.00	4.50	14.75
	(TC)	4.50	7.00	4.00	3.00	1.00	5.50	25.00
Maryland School for the Deaf		3.00	5.67	3.67	5.67	1.67	3.17	22.05
Minneapolis Public School System		1.00	1.00	6.50	1.00	1.00	3.50	14.00
New Mexico School for the Deaf		3.33	5.50	6.00	4.00	2.00	2.50	23.33
Rochester School for the Deaf		6.17	1.17	4.00	5.67	2.33	3.50	22.84
St. Paul Public School System		3.67	5.67	5.33	5.83	1.50	2.50	22.50
TOTAL		26.5	33.01	41.25	31.67	12.50	28.00	

Table 27

Communication Analysis

Most Frequently Employed Modes of
Communication in Classroom Interaction

School		Child to Child		Child to Teacher		Teacher to Child	
		1	2	1	2	1	2
American School for the Deaf		Signs	Combined	Signs	Combined	Signs	Combined/ Oral-Aural
Callier Speech & Hearing Center	(Oral)	Gestures	Oral-Aural	Oral-Aural	Gestures	Oral-Aural	Gestures
	(TC)	Signs/Gestures		Gestures	Signs	Signs	Gestures
Maryland School for the Deaf		Signs	Combined	Signs	Combined	Signs/Combined	
Minneapolis Public School System		Gestures	Oral-Aural	Oral-Aural	Gestures	Oral-Aural	Gestures
New Mexico School for the Deaf		Signs	Oral-Aural	Oral-Aural	Signs	Oral-Aural	Signs
Rochester School for the Deaf		Gestures	Fingerspelling	Oral-Aural	Gestures	Fingerspelling	Combined
St. Paul Public School System		Signs	Gestures	Signs	Combined	Oral-Aural	Gestures

Children Identified as Having Made the Most or Least Progress

Progress During the 1972-73 School Year

In an attempt to uncover some basic characteristics which may lead to success or failure in early educational experience, the following question was presented to each supervising teacher during the 1973 visits: "In your estimation, who are the three children who have made the most and least progress?"

Criteria for selection was often based on a child's emotional adjustment as well as academic or social progress; selections were limited to the children currently involved in the research project. This was a difficult question for all teachers, but was especially so for those teachers in programs with a small number of children.

Comparisons were made between children identified as having made the most progress and those children who showed little progress across all programs. The two groups did not differ significantly in age, etiology, hearing loss or the reflectivity-impulsivity dimension. The scores of those judged to be making the most progress were significantly higher on the following five variables: receptive communication, articulation, the Metropolitan Readiness Tests, IQ and the Illinois Test of Psycholinguistic Abilities (See Table 28).

In 1972 those judged as having progressed the most were superior on only two measures, the Illinois Test of Psycholinguistic Abilities and the Receptive Communication Scale. This year's results suggest that teachers, in measuring the progress of their children, depend on the child's intelligence, articulation skills and academic readiness as well as his communication abilities. It appears that

Table 28

Significant Comparisons between Children Designated as Having Made the Most and Least Progress

Test	Comparison	t	df
Leiter IQ	Most Progress > Least Progress	3.1126*	40
ITPA		3.2819*	40
Receptive Communication		5.9331**	40
Articulation		3.7545*	40
MRT		2.9205*	39

*p < .01

**p < .001

as the children become older, competence in all areas influence the teachers' estimation of school progress.

Brown Parent Attitude Scale

The disposition and expectations of parents toward social and academic achievement are of great importance to the educational development of children. These attitudes and expectations may significantly affect educational progress and predict success in preschool and beyond.

It is therefore of interest in the present study to examine changes which occur in parental attitude as the child becomes older. Will parents lower their expectations, or raise them? If there are changes, will they be a function of the child's success or failure? What role does the child's program play in the formation and change of parent attitudes?

In an attempt to measure these feelings, A Parental Information and Attitude Scale for Parents of Hearing Impaired Children (Appendix G) was again distributed to all parents in the sample for completion and return. Developed by Dr. Donald W. Brown at Gallaudet College, this scale is divided into three parts:

> Part I pertains to general information such as occupation, education, and information about various aspects of the child's hearing impairment.
>
> Part II is entitled, "Your Child Thirty Years From Now." It assesses parental expectations by having parents rate such statements as "will be a college graduate" on a five point scale from "very good chance" to "no chance at all."
>
> Part III consists of some typical statements and opinions about hearing-impaired individuals. Parents are requested to circle the answer which best indicates their own feelings about that particular statement.

Thirty-three families returned the completed questionnaires.

Results

Part I: General Information: The general information, covering basic data on family socio-economic status and questions concerning the hearing impaired child, has remained relatively constant from year to year. Because of the minimal change in this information, the reader is referred to the 1970-71 EPHIC Report for data regarding the age of parents, their educational background, the persons initially contacted when hearing loss was suspected, articles and journals on hearing impairment read by parents, etc.

Part II: Your Child Thirty Years From Now: The data consisted of the number of parent responses to each of nineteen statements rated along a five point scale from "very good chance" to "no chance at all." The Chi Square statistic (Winer, 1962) was employed to test for differences between the distribution of parents' responses in 1972 and 1973 and between the parents of children in oral and combined programs.

There have been no significant differences on individual statements from 1971 to 1972, and from 1972 to 1973. However in 1972 there was a definite shift toward more neutral responses perhaps reflecting a trend toward realistic acceptance of the hearing loss by parents. 1973 scores have stabilized near those of the previous year.

There were 12 statements in which the oral and combined parents reflected modal agreement (the largest number of responses fell in the same category). These parents concurred that there was a "very good chance" that their child be a college graduate, drive

a car, be close to his brothers and sisters, know his neighbors well, be in good health, depend on SR more than his hearing, keep in touch with them, and belong to an organization of deaf or hard of hearing. There was "some chance" that he would have more deaf than hearing friends and will be married to a person with normal hearing, will be employed in semi-skilled or skilled job rather than profession, and have difficulty using English correctly.

The Chi quare statistic was applied to the remaining seven statements to reveal any significant differences in pattern of responding between the two groups. Only one statement reflected a significant difference in attitude between the combined and oral parents at the .01 level of significance.

Most oral parents felt that there was a very good chance that the child would graduate from a regular high school while most combined parents felt there was little chance of this occurring ($X^2 = 10.06$, $p < .01$).

Part III: The data consisted of the number of parent responses to 14 statements, each containing 5 multiple choice answers. Instructions to the parents were as follows:

> Many statements and opinions have been expressed about hearing-handicapped people. We are interested in learning the reactions that you, as the parent of a hearing-impaired child, would have to the following statements. Please read each statement carefully. Circle the letter in front of the response which best expresses what you think of or would do about the statement.

Comparisons were made between the parents who responded in both 1972 and 1973. Responses for both years were similar. A significantly different distribution of responses was found on

only one question: Alexander Graham Bell...once said that finger-spelling was the fastest and most efficient way to teach language to deaf children ($X^2 = 22.48$, $p < .001$). In 1972, the most popular response was, "I find it difficult to believe Bell ever said that." The most frequent response in 1973 was, "I think that he was probably right."

Comparisons were also made between all parents of children in combined programs and all parents of children in oral programs, regardless of whether or not they responded in 1972. Table 28 presents the statements on which both groups agreed. Table 30 presents the statements on which the two groups differed, followed by the most frequently chosen answer of each group. The comparison for question 13, "Most deaf people prefer to associate with other deaf people rather than hearing people was significant ($X^2 = 13.49$, $p < .01$).

Table 29

Questions on Which Parents of Children in Oral Programs and Parents of Children in Combined Programs Agree

Question 3: There is so much disagreement about education of the deaf that the best thing to do is:

d. Realize that what seems to be best for others may not be best for my child

Question 5: Alexander Graham Bell said, "I think the use of sign language will go out of existance very soon.":

d. Bell would never have said that

Question 6: Most deaf people marry a deaf person:

b. If this is true, it is because of the communication barrier imposed by deafness

Question 7: If a friend of mine discovered that her child was deaf:

e. I would feel obligated to share with her the satisfaction I have now that I've found the right program

Question 8: It is reported that many deaf adults who do not have intelligible speech are successfully employed and well adjusted:

b. This does not surprise me

Question 9: An oral teacher of the deaf claims that many deaf children can't learn to speak:

e. I agree - some can but many can't

Question 10: One of the disadvantages of getting together with other parents whose children are in my child's school is:

c. There are <u>no</u> disadvantages

Question 11: A deaf adult says that he and his deaf friends don't think speech is very important:

c. Possibly he and his friends have found satisfactory adjustment without speech

Question 12: We all have too little time. Because of this I should devote my short reading time to:

a. Books and articles whose authors know what they're talking about

Question 14: The primary function of an educational program of hearing impaired children is to:

d. Provide appropriate instruction in academic skills, i.e., reading, language writing

Table 30

Questions on Which the Modal Response of Parents of Children in Oral Programs and Parents of Children in Combined Programs Differ

Question 1: Alexander Graham Bell, inventor of the telephone and strong supporter of teaching speech to deaf children, once said that fingerspelling was the fastest and most efficient way to teach language to deaf children:

c. I think he was probably right (combined)

d. This is interesting but probably needs some research to prove it or disprove it (oral)

Question 2: Stuckless and Birch (University of Pittsburgh) report that their study has indicated that manual communication (sign language and fingerspelling) does not hinder the development of speech in young deaf children:

b. This is reassuring because I've wondered about that (combined)

d. They mean that this is true if the child has already developed speech before he is exposed to manual communication (oral)

Question 4: Some people have said that many fewer deaf people than hearing people are able to go to college:

d. These people are talking about previous generations and are unaware of current progress (oral)

e. This seems quite logical to me (combined)

Question 13: Most deaf people prefer to associate with other deaf people rather than hearing People:

c. I imagine this is true - they understand each other's speech easier (combined)

d. This is why deaf children should be taught with regular children (oral)

Semantic Differential

A measure intended to systematically compare parent attitudes towards concepts related to deafness was designed using the semantic differential technique (Moores, McIntyre & Weiss, 1972). This principle involves rating a concept along a seven step scale between pairs of bipolar adjectives (sad-happy, etc.). The rationale and execution of the semantic differential are complex. The reader is referred to Osgood et al. (1957) for more detailed information and description of the semantic differential as a measurement tool.

It was hypothesized that the parents may differ along dimensions according to the program in which their child is enrolled. Presumably parents have certain attitudes towards various philosophies and methodologies of education either because they have chosen a particular program for their child, or because, through their involvement in their child's program, they have been convinced of the efficacy of a particular program's method. One important aspect of the study is to investigate changes in parental attitudes as the children progress through various educational systems.

The semantic differential scale sent to parents in 1971 was shortened and slightly modified for the 1972 evaluation. The same form was used in 1973. The present semantic differential instrument measures attitudes towards the following concepts:

- Speechreading-Lipreading
- Hearing Impaired
- Sign Language
- Deafness
- Speech
- Hearing Aid
- Auditory Training
- Fingerspelling
- Integration of Deaf Child into a Hearing Class

The twelve pairs of bipolar adjectives were chosen on the basis of previous work by the senior investigator. Two minor changes were made in the adjective pairs used in the 1972 form. A sample of the semantic differential developed for the project is presented in Appendix H.

All parents of the sample of children received a copy of the semantic differential to be filled out and returned with the Brown Parental Attitude Scale. As in 1972, the return of questionnaires was relatively small.

The basic data consisted of the average of responses on all twelve adjective pairs for each concept. The higher the concept score, the more positive the attitude. Comparisons by t-test were made between parents of children in oral programs and parents of children in combined programs. Both groups have similar attitudes toward the concepts of speech, speechreading, hearing aid, auditory training, deafness and hearing impaired. Parents of children in oral programs were significantly more positive in their attitudes toward the concept of integration of a deaf child into a hearing class. Parents of children in combined programs were significantly more positive toward the concepts of fingerspelling and sign language. These comparisons are summarized in Table 31.

There seem to be no major changes in the attitudes of the parents from 1971 to 1972 or 1973. It remains evident that parents of children in combined programs do not perceive these programs as manual only. Speechreading, hearing aid, speech and auditory training all received positive ratings equivalent to sign language and finger-

Table 31

Concepts Showing Significant Differences Between Parents in Oral and Combined Programs on the Semantic Differential Measures

	Integration of Deaf Child into a Hearing Class		Sign-Language		Finger-spelling	
	Oral	Combined	Oral	Combined	Oral	Combined
N	31	24	31	24	31	24
$\bar{X}$	5.93	4.65	5.23	6.16	5.22	6.14
SD	.83	1.61	1.14	.60	1.11	.72
t	3.[illegible]3*		3.63*		3.50*	

*p<.001

spelling. All concept comparisons are depicted graphically in Figure 2. Little distinction is noted between the terms deaf and hearing impaired.

Parents of children in oral classes do not appear to view sign language and fingerspelling as negative. Their reactions tend to be neutral.

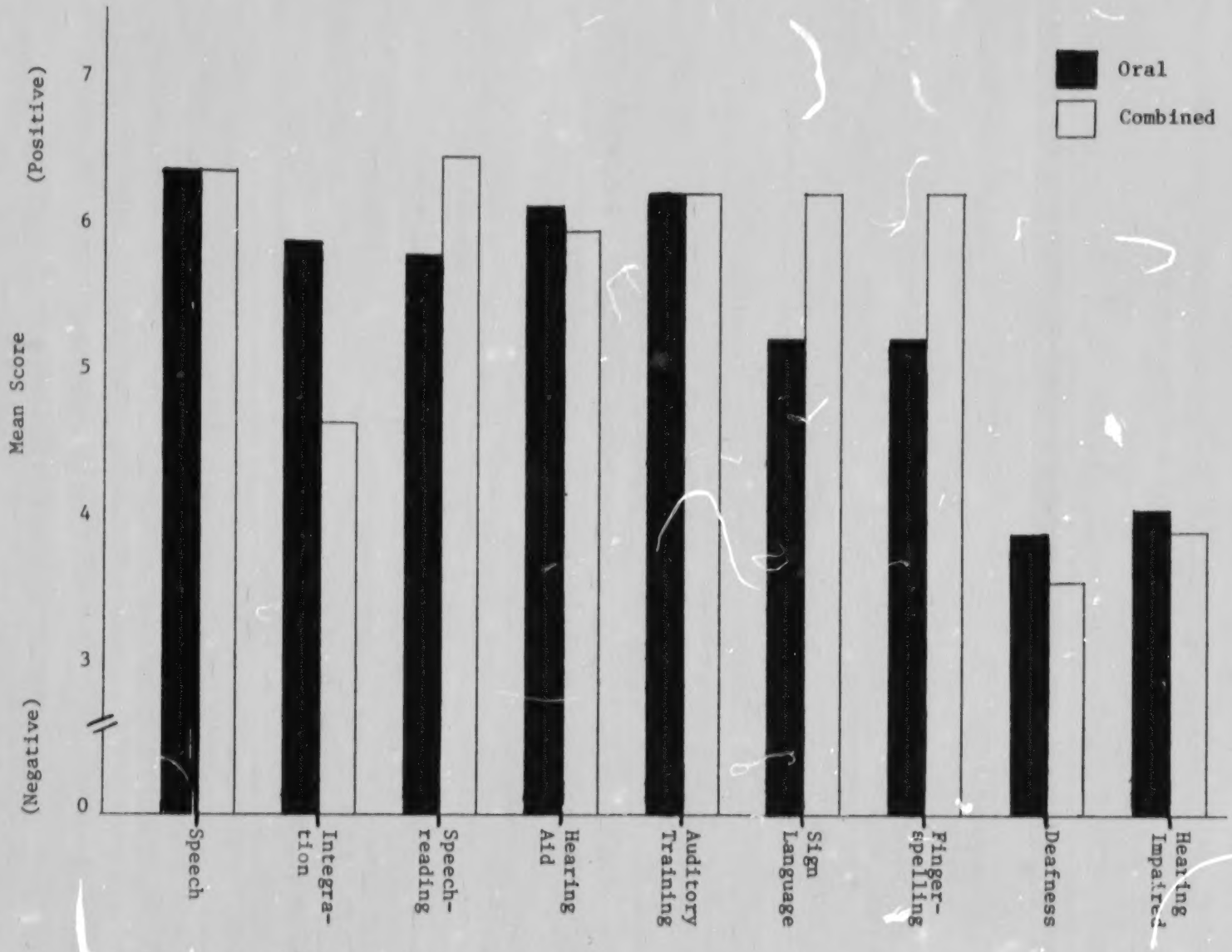

Figure 2. Semantic Differential Measure - Responses by Parents in Oral and Combined Programs

Individual Case Studies

Four children who were tested this year had moved from their original programs. The authors decided it was appropriate to discuss each one of them separately in an attempt to gain insight into each child's progress. Future investigations of this type are planned.

Child A had transferred from the Minneapolis program in 1971 and is now in his second year as a residential pupil in the Minnesota School for the Deaf. This program is in transition from the Oral-Aural to Total Communication approach.

In 1971, Child A received an ITPA total score of 164 compared to 191 in 1972 and 172 in 1973. On the Receptive Communication Scale, Child A was able to correctly receive 72% of 25 items, an improvement of 32% from 1972. Raters correctly identified 24% of Child A's utterances on the 10 word Articulation Measure. A raw score of 46 was attained on the four subtests of the Metropolitan Readiness Tests.

In 1971, Child B transferred from the Minneapolis program to a hearing nursery in another city, where he has continued to receive support services from the special education division.

In 1971 Child B failed to obtain a basal age on the ITPA, while in 1972 a score of 196 was achieved. In 1973 a total score of 88% was recorded on the Receptive Communication Scale, and 19 raters accurately identified 84% of his utterances on the Articulation Measure. A Metropolitan Readiness Test score of 36 was obtained.

Child C was enrolled at the Callier Center during the 1971-72 school year and in the Minneapolis Public School Program for the 1972-73 school year. She is now a day pupil in a Total Communication preschool class in a rural Minnesota city. Examiners were able to obtain her cooperation on only one measure during the first two years of the study. In 1973, Child C cooperated readily during the testing sessions. Her ITPA score of 183 is below her 1971 score, however, it is still slightly above the mean for hearing children. She received scores of 52% on both the Receptive Communication Scale and Articulation Measure. Her Metropolitan Readiness Tests score was 44.

In 1971-72, Child D was part of the Rochester School sample. He is currently enrolled in an Oral-Aural class for hearing impaired students within the Rochester Public School System. In 1973 Child D achieved an overall ITPA score of 187, somewhat lower than his previous scores of 203 and 198. His Receptive Communication Scale score of 88% shows a 23% increase over that of the preceding year. 62% of Child D's utterances were correctly identified by raters. He received a raw score of 37 on the Metropolitan Readiness Tests.

Table 32 contains background data and a summary of test scores for these four children.

Table 32

Background Data on Case Studies

	Sex	Chronological Age (in months)	IQ	Etiology	Age of Onset	Hearing Loss	ITPA 1971/1972 1973	Receptive Communication Scale 1972/1973	Articulation 1972/1973	Metropolitan Readiness Tests
Child A	M	81	107	Meningitis	2 yrs.	110db	164/191 172	40%/72%	32%/24%	46
Child B	M	63	119	Unknown	1 1/2 yrs.	80db	(NT)*/196 189	55%/88%	50%/84%	36
Child C	F	65	124	Rubella	Birth	108db	199/(NT) 183	(NT)/52%	(NT)/52%	44
Child D	M	81	107	Fever	1/2 yr.	83db	203/198 187	65%/62%	83%/62%	37

*non-testable

CHAPTER 5

DISCUSSION

The findings will be discussed following the order of presentation of results in Chapter 4. The reader is referred to that section for the tabular and narrative presentation of data.

Illinois Test of Psycholinguistic Abilities (ITPA) (Table 7, Figure 1)

The overall mean score of 180.03 indicates that the functioning of the young deaf children in the study on visual-motor subtests of the ITPA is essentially normal. The overall predicted mean score for children with normal hearing would be 180. The mean score of 179.96 for the same deaf children in the 1972 survey shows very strong stability over the period of a year and strengthens the conclusion that the deaf children function at normal levels on the abilities tapped by ITPA visual motor subtests. Because the results indicate a growth of one year of achievement on the ITPA over the period of one calendar year, there is evidence to suggest that the rate of growth is also normal. The relatively low score of 170.20 for the 1971 testing may be explained by the authors' original reaction that some subtests originally provided spuriously low estimates for deaf children's ability because of fairly elaborate verbal directions and, in the case of Visual Closure, the involvement of timed tasks.

Scores by subtest present graphic evidence of the lack of differences between the deaf subjects and the hearing standardization population on four of five subtests. The results are the same as

reported in 1972. As in 1972, the only statistically significant difference shows the deaf students to be superior in Manual Expression. For the second consecutive year, Manual Expression is the only subtest in which the average score of children in each of the seven programs was above the hearing average of 36. The consistency of the results lends credence to the hypothesis, originally stated in the 1971-72 report, that deaf children, in developing mechanisms to cope with the environment, acquire superior skills in this area.

In examining scores by programs, it should be noted that the originally large range of scores among programs had decreased. In the first year of data collection, the average program scores ranged from 159.95 for Minneapolis to 190.56 for Callier (Moores and McIntyre, 1971, p. 39). In 1972, the scores ranged from 175.67 for Minneapolis to 191.66 for St. Paul (Moores, McIntyre and Weiss, 1972, p. 35). The present range is 169.50 for Rochester to 187.50 for St. Paul. Although children from programs which have been less academically oriented tend to score lower, they seem to close the gap as they enter more intellectually demanding first grade settings. The below average functioning of the children in Minneapolis, both in 1972 and 1973, may be explained by their poor scores on the Visual Closure subtest. Perhaps this may be accounted for by the fact that this program is the most heavily "auditory-based" of the seven. Since the children tend to perform at normal levels on the other four subtests, possibly specific activities related to this area would be beneficial.

Another finding which has intrigued the authors was the fact that

children from the Rochester program were lowest on ITPA scores but earned the highest scores on the newly developed Piagetian-based test of cognitive functioning. Implications will be discussed in a following section.

The ITPA continues to be a useful tool for the purposes of assessment of deaf children involving visual-motor abilities. The fact that it continues to correlate with a number of other measures, especially receptive communication scores and teacher ratings of progress indicates that it is tapping skills significant to the educational process.

Metropolitan Readiness Tests (MRT)
(Tables 8, 9 and 10)

The generally superior functioning of deaf children in the study to the normal standardization population (Table 8) presents strong support for the argument that the preschool programs have provided these children with skills necessary for success in the first grade. Of special importance is the fact that children in six of the seven programs scored above the norms. The statistically significant superiority of the deaf children in the Matching and Alphabet subtests may be attributed directly to preschool training experiences. The authors have tentatively concluded that manual communication has positively affected scoring on the Alphabet subtest on the basis of the results showing the two programs with the lowest scores were the two not allowing manual communication in the classroom (Callier transferred four children to Total Communication classes just prior to testing). At present, the

authors are not prepared to state whether the relatively low score on the Numbers subtest reflects real differences between our sample and the standardization population or whether some or all of the differences might be due to the verbal content of the task even after revisions were made.

The high functioning of students in the American, Maryland and New Mexico programs on this test reflect the academic nature of their preschool and primary programs. Of special interest is the relatively low scores obtained by students in the St. Paul program. Given the past emphasis on cognitive, academic training, greater than that received in the above combined oral-manual programs, the MRT attainments seem poor. A partial explanation may be in the fact that three out of the six children have been integrated into hearing classes. Following a common pattern of placing deaf students with younger hearing students, the children were assigned to kindergarten rather than first grade classes where they would have received a more academic curriculum. It is unclear whether the results of such placement tend to dissipate earlier gains. It is also unclear as to what positive and negative social effects ensue. At present, however, in terms of academic readiness, the practice is debatable.

Communication Battery

Receptive Communication (Tables 11, 12, 13 and 14)

In terms of relative efficiency across modes, the results were identical to those found in the 1971-72 report. Children

received communication most efficiently when it was presented simultaneously through Speech and Signs (86%), followed by simultaneous Speech and Fingerspelling (72%). The most inefficient means was Sound Alone (43%), i.e., when the child had to rely on hearing alone, without the benefit of visual clues. The adding of Speechreading improved scores to 63%. Consistent with the 1971-72 results it appears that the adding of each dimension, Sound plus Speechreading plus Fingerspelling plus Signs adds an increment of intelligibility. In corroboration of previous results, it is also apparent that the use of manual communication does not detract from oral receptive skills. Over all the programs which score highest are those which have used some form of manual communication from time of of entrance into the school program. The reported correlation of .61 between hearing loss and receptive communication scores for children in oral programs, as compared to .09 for those in combined programs reflects the greater importance of residual hearing for success for deaf children in oral programs.

Table 14 indicates an increase in Receptive Communication scores from 1972 to 1973 even with the addition of a Noun-Verb component to the test. By subtest the greatest improvement was noted in the Printed Word section, reflecting the increased emphasis in the development of reading and prereading skills. The smallest gains are noticed in the Sound plus Speechreading section. It is possible that scores are reaching a ceiling when signs are used, especially in the American School where children were correct on 91% of the items.

The range between programs appears to be diminishing. Scores by program range from 43% to 60% correct in 1972 and from 59% to 69% correct in 1973.

Examination of Table 12 reveals a number of interesting patterns. On scores for Sound Alone, for example, St. Paul (63%) and Minneapolis (59%) rank higher than other programs. The reasons for this are not readily apparent since the programs differ from each other in methodology, philosophy and orientation. The two programs are the only completely public school programs in the study but it is not clear whether this should make any difference since the majority of children in other programs commute from home. The differences cannot be explained by integration or placement contiguous to hearing children because all of the Minneapolis children and half of the St. Paul children were in self-contained classes. The authors have tentatively concluded that the differences are due to techniques of auditory training and aural rehabilitation. This will be explored in the coming year.

The poor performance of children in the St. Paul program, relative to their rank in 1972, on the tests involving Fingerspelling and Signs reflect the placement of one half of the children in integrated classes where little use is made of manual communication. Although the St. Paul children score at 80% on both tests, which is higher than scores on any other subtests, less use is apparently made of manual communication in the home as well as at school by the integrated children. This finding is consistent with reports from the Soviet Union that many children

drop their earlier reliance on fingerspelling as they develop oral skills (Moores, 1971). It also refutes a belief of many educators of the deaf that if children use manual communication early in life they will never have the motivation to develop oral skills.

Expressive Communication (Table 15)

As noted in the Results section, the authors consider the measure of Expressive Communication to be in an experimental form. For this reason the results should be interpreted with caution. However, there were a number of interesting trends which, if they continue to show up in future testing, may be of great significance.

In terms of overall scores, the programs appeared to break into three clusters. Scores of students in New Mexico and Maryland were slightly below 50% correct, approximately twice as high as those in Rochester (26.00%) and Minneapolis (25.35%), with students from St. Paul (42.50%), the American School (40.33%) and Callier (39.29%) scoring at intermediate levels.

As anticipated, Interpreters made more correct identifications (47%) than Deaf Adults (35%) and Graduate Students (32%), who were not affiliated with education of the deaf. For Interpreters, highest ratings were gained by students at New Mexico (63%) and Maryland (56%) and the lowest scoring programs were Minneapolis (32%) and Rochester (27%). Deaf Adults correctly identified 58% of the Maryland utterances and only 6% of the Minneapolis children's attempts. The Graduate Students, who were naive in the use of manual communication were most successful in identifying the

utterances of children in St. Paul (58%), with Callier (44%) and New Mexico (41%) forming a second cluster. Children in Rochester (17%) and the American School (17%) did least well with this group of raters.

The results, cautiously interpreted, suggest that the programs most effective on this assessment (Maryland and New Mexico) are those which use combined oral-manual techniques. Their ability to utilize manual communication does not appear to detract from their ability to communicate when naive hearing raters are involved.

An interesting aspect of the rating procedures involved the activities of the graduate students. In the course of their ratings some of them correctly "decoded" some of the more frequently used signs and by the end of the testing volunteered the information that they thought they understood signs for things such as baby, cat, etc. Under questioning by one of the authors it was usually found that they were correct.

Articulation (Tables 16, 17, 18.

The authors must reemphasize that scores on the articulation test do not represent measures of language per se. They are ratings of single words uttered in isolation and the authors are unwilling to project these scores to spoken language.

Examination of Table 18 indicates that children in Minneapolis and St. Paul rank first and second respectively with average correct identifications of 52% and 49%. Per cent of correct identifications for the other programs ranged from 19% to 26%. The situation is

similar to scores on the Sound Alone subtest of the Receptive Communication Scale where children from St. Paul scored 63% correct and Minneapolis 59% correct compared to a range of 31% to 45% for the other five programs. It appears that these two programs are developing superior aural receptive and articulation skills but the reasons for the superiority are unclear given the differences in methodology and training procedures between the two. During the 1973-74 evaluation the authors plan to investigate possible reasons for the results obtained.

It should be noted however, that the differences reported in favor of the Minneapolis and St. Paul programs are significant at the .05 level and not at the .01 level. This is the only time in the three years of reporting that the .05 level has been accepted. The authors were hesitant to do so but decided it would be appropriate given the large differences in mean scores between programs. However, the reader must be alerted that the differences did not reach the .01 level because of the wide range of scores within programs. In each program, including Minneapolis and St. Paul, there were children who were almost completely unintelligible. Thus the individual range of correct identifications were from 5 to 80% in Minneapolis and 13 to 82% in St. Paul as compared to 1 to 90% in New Mexico and 3 to 85% in Callier. Given the range of scores within programs, it is obvious that no program is developing adequate articulation skills in all children.

Cognitive Development Measures

(Tables 20 and 21)

The results of the Piagetian based Cognitive Development Measures raise a number of interesting questions. Given the use of materials and procedures developed by Dr. Sidney Wolfe based on Piaget's theory, the superiority of children at the Rochester School on this measure is readily explainable. The range of average program scores in the other six programs, 26.40 to 30.17 does not appear to be large.

Although Table 21 presents high correlations between Conservation and Metropolitan Readiness Tests (MRT), correlations of Classification and Seriation with MRT subtests were somewhat lower. Of interest to the authors was the fact that of the three Cognitive Development subtests, only Conservation and Seriation were significantly correlated.

A comparison of Cognitive Development scores (Table 21) and MRT scores (Table 8) indicate a high score on one and does not necessarily imply a high score on the other. For example children in the American School for the Deaf were second on the MRT and sixth on Cognitive Development while those from St. Paul were sixth on the MRT and second on Cognitive Development. Even greater discrepancies appear when Cognitive Development measures are compared to program scores on the ITPA (Table 7). The most obvious example is Rochester, which placed first on Cognitive Development and last on the ITPA. Scores on the ITPA correlate with teachers' progress ratings and Receptive Communication scores. At the

present time, the authors must withhold judgment on the benefits of training children directly on Classification, Conservation and Seriation tasks. The transfer to other behaviors is unclear. The authors intend to analyze the data exhaustively for relationships between the Cognitive Development Measures and all other data gathered. The results will be reported in detail in a separate report.

Matching Familiar Figures Test (MFF)

Because no differences exist between programs on the MFF, the authors conclude that program differences have no discernable effects on the "perceptual tempo" (Kagan, 1965) or children within the programs. In terms of etiology, it was of particular interest to determine if a proportionately larger number of children classified as rubella might appear in the impulsive category. The lack of differences by etiology suggests that rubella children with no handicaps other than deafness are not more "impulsive". Whether or not this is true of multiply handicapped rubella children is a different matter.

Since reflective children were superior only on those subtests of the ITPA (Visual Closure) and MRT (Copying and Matching) which are timed, it is possible that impulsive children in this sample may not be inferior on pre-reading skills but rather that, when facing a task with time constraints, they tend to use inappropriate strategies under pressure.

Classroom Observation

(Tables 22, 23, 24, 25, 26, 27)

In total classroom observation scores (Table 23), New Mexico and Rochester scored the highest and Minneapolis and St. Paul the lowest. The results are different from 1972 in which Maryland, St. Paul and New Mexico scored highest. The greatest change relative to other programs is observed in the St. Paul program. Significant program differences were found in the following categories (Table 22): Classroom Organization, Structuring Program, and Encouraging Language and Speech Development. In each case, scores for the Minneapolis and St. Paul programs were lowest. Given the high scores of the two programs in Articulation it is difficult to interpret the poor ratings on Encouraging Language and Speech Development. This is the first year differences have been noted between any programs in this area. Perhaps the above mentioned two programs are concentrating on training of articulation per se. If so, one might expect indications of this in other measures. The 1972 evaluation reported that the St. Paul program appeared to be the most consistently effective across all measures (p. 93). This does not appear to be the case in 1973. Perhaps its drop in rank from second to seventh in overall classroom observation reflects an overall change of emphasis which might appear more generally in the 1974 data.

Communication Mode by Program.

Inspection of Tables 24, 25, and 26 reveals that there is a

great variety in the amount and type of communication that takes place. This is explained both by the different modes of communication employed and by differences between programs regarding their philosophy concerning task oriented behavior and personal interaction.

Child to Child (Table 24). The total amount of Child to Child interaction ranged from a low of 13.17 in Minneapolis, also lowest in 1972, to a high of 20.83 in the American School, which was second lowest in 1973. The dramatic change in children in the American School was attributed to the introduction of Total Communication in the spring of 1972. Since that time, children in the American School have increased their frequency of Fingerspelling, Signs, Combined and, interestingly enough, Oral-Aural Communication.

Across programs the amount of communication between children has increased for all categories, except writing, which has not been observed, with the greatest increase in combined oral-manual communication. Gestures continue to be common and appear to be employed most in programs which have not used signs in the past; Callier, Minneapolis and Rochester.

An important detail to note is that, of the two programs most frequently using Oral-Aural communication without signs or fingerspelling, one (New Mexico) is a Total Communication program and one (Minneapolis) is Oral-only.

Child to Teacher (Table 25). Again there was a wide range in the amount of interaction. As in Child to Child communication, interaction was noted most frequently in the American School and least

frequently in Minneapolis. Again, consistent with the Child to Child data, the Minneapolis program was lowest and the American School second lowest in 1972. Across programs the most frequent Child to Teacher mode of communication is Oral-Aural. Signs have replaced Gestures in second place. The greatest increase is noted in combined oral-manual communication. By programs children in Callier, Minneapolis and Rochester resort more to gesture, probably due to the lack of a sign vocabulary. Children in the New Mexico school use Oral-Aural communication more than those in any other program, further strengthening the argument that children who learn manual communication will not neglect oral skills if properly motivated.

Teacher to Child (Table 25). The most common mode across programs is Oral-Aural followed by Sign and Combined. Teacher-Child communication appears to be more consistent than that noted in previous years and tends to follow the expressed philosophy (Oral, Total Communication or Rochester Method) of a particular program. The only exception seems to be the continuing and relatively heavy reliance on gestures by teachers in Callier, Minneapolis and Rochester, where signs have not been utilized in the past.

Total Classroom Interaction.

Table 27, which shows the two most frequently employed modes of communication in each of the three types of interaction (Child-Child, Child-Teacher, Teacher-Child), presents evidence of emerging communication styles within various programs. Signs and Combined

interactions are noted for all three types of interaction at the American and Maryland Schools for the Deaf. Similar consistency is shown at the New Mexico School where the most common modes were Signs and Oral-Aural. Of equal consistency but of more questionable educational usefulness, is the pattern in the Minneapolis and Callier (Oral) program in which Gestures and Oral-Aural communication were most common. The extent to which teachers in these programs are aware of the amount of information communicated by gestures remains unclear. Whether conscious or not, gesture remains a major mode of giving and receiving information. The children recently placed in the Callier Total Communication program use Signs and Gestures with teachers and each other. Teachers use Oral-Aural and Combined modes less than Gesture, suggesting that the children actually are being exposed to a Manual Communication as opposed to a Total Communication program. Although these children have been placed as a result of perceived inability to progress in an Oral-Only environment, it is to be hoped that teachers will make a concerted effort to incorporate oral modes in their teaching. The Rochester and St. Paul programs seem to evidence less consistency in interaction patterns, due primarily to a tendency of the children to rely on gestures, while teachers do not. The fact that reliance on gestures by both teachers and children in New Mexico, Maryland and the American Schools is relatively infrequent suggests that the children have developed Oral-Manual skills which enable them to function in a variety of settings without resorting to ingroup communication consisting of gestures and "natural" signs.

Children Identified as Having Made the Most and Least Progress

(Table 28)

Supervising teachers were asked to identify children making the most and least progress in order to identify the variables by which such judgments are made. The results suggest that the criteria change and become more complex over time. In 1972, those judged as making the most progress were superior only on Receptive Communication and the ITPA. This year they were superior (Table 28) on Leiter IQ scores, Articulation Scores and the Metropolitan Readiness Tests as well as on Receptive Communication and the ITPA. It appears that, as children become older, competence in an increasing number of areas contributes to estimations of progress.

Brown Parent Attitude

(Tables 29 and 30)

Reactions of parents on the Brown Parent Attitude Scale are similar to these obtained in 1972 and continue to reflect a trend to more neutral and, in the authors' opinion, more realistic attitudes. On the 20 statements in Part II "Your Child Thirty Years From Now," significant differences were found on only one statement. Parents of children in oral programs think there is a greater chance of their children graduating from regular high schools. The lack of significant differences in responses to other questions reflects a shift in attitude toward that held by

parents of children in combined programs. Parents of children in oral programs no longer express the assurance they did in 1971 and 1972 that their children would not use Sign language as a preferred means of communication or that they would not use manual as well as oral communication. They have also changed from their original belief that the primary function of an educational program for hearing impaired children is to develop speech and speechreading skills. Along with parents of children in combined programs, they now perceive a program's primary function as provision of appropriate instruction in academic skills, i.e., reading, language, writing.

Responses to the 14 statements concerning hearing impairment reflect some continuing differences between groups and also show interesting shifts for parents as a whole. In 1972 both sets of parents responded to the statement that A.G. Bell once said that fingerspelling was the fastest and most efficient way to teach deaf children with the response, "I find it difficult to believe he ever said that." In 1973, parents of children in Combined programs answered, "I think he was probably right." and those of Oral program children responded, "This is interesting but probably needs some research to prove or disprove it." In 1972 both sets of parents answered the statement that most deaf people prefer to associate with other deaf people rather than hearing people with, "If they are happy doing this -- that's fine." In 1973, combined parents responded it was probably true because deaf people understand each other's speech better. Oral program parents tend now to view the prospect in a somewhat more negative light and have

responded, "This is why deaf children should be taught with regular children."

The two sets of parents continue to respond differently to the Stuckless and Birch finding that Manual Communication does not hinder speech development. The Combined program parents are reassured and the Oral program parents interpret it as referring to the use of manual communication after speech has been developed.

In general, responses to the complete attitude scale suggest that the parents have made adequate and realistic adjustment to deafness in their children. There are several trends but an overall tendency exists for fewer attitudinal differences between parents of children in Combined and Oral programs, mainly as a result of shifts in responses in the oral program group towards those of the Combined program group. Still, some differences continue to exist between parents as a function of their deaf child's program. Differences remain related essentially to desirability and timing of the use of Manual Communication and educational placement with normally hearing children.

Semantic Differential

(Table 31, Figure 2)

The results are similar to those represented in 1972. Parents of children in Combined programs tend to perceive speech, speech-reading, hearing aid, auditory training, sign language and finger-spelling as good, relatively equivalent concepts. They continue to view their children's programs as Oral-Manual not just oral or

just manual. Parents of children in Oral programs rate sign language and fingerspelling as neutral to good concepts where in the past they were viewed as negative. Although their ratings for these concepts remain significantly lower than those of parents of children in combined programs, they appear more accepting of the terms. As in 1972, the third concept in which a significant difference was found is integration of a deaf child into a hearing class, which parents of combined children view neutrally and parents of Oral program children positively. Both groups of parents continue to view deafness and hearing impaired as equivalent terms. The results indicate little change in parent attitudes except for a somewhat softened reaction to sign language and fingerspelling by parents of children in Oral programs, supporting the findings reported for the Brown Parent Attitude Scale.

Overall Program Effectiveness

In the 1972 report the authors attempted to determine what variables might be most important in the development of effective preschool programs for the hearing impaired by identifying those programs which appeared to be producing relatively good results across the areas assessed. This was done in an effort to isolate those components which the programs had in common. Three programs were identified and the aspects common to those programs are as follows:

1. The programs have a heavy cognitive/academic orientation from the beginning, with emphasis on pre-reading and readiness skills.
2. The children in the programs have been exposed to some form of manual -- as well as oral -- communication from the time of entrance into the system.
3. Classroom activities tend to be structured and organized.
4. Auditory training activities are integral parts of the school day.
5. Parents view the programs as combined Oral-Manual, not Oral-Only or Manual Only.

As outlined in the original statement of purpose for the project (Moores, 1970b), the objective of the study is not to identify the "best" program which might serve as a model for all others. Rather, it was anticipated that, as the study progressed, evaluation would become more and more complex and that analyses would concentrate increasingly on interactions between various types of treatments and outcomes.

The authors believe that the seven programs involved in the evaluation represent seven of the most effective programs in the United States. It is apparent that each is producing different patterns of strengths and weaknesses in the children it is educating. Each has areas in which it is outstanding and each has areas in which there are relati[illegible]esses. Remaining cognizant of this, the authors identified three programs which seem to produce the most consistently high results across the following major areas

assessed: Illinois Test of Psycholinguistic Abilities (ITPA), Metropolitan Readiness Tests(MRT), Receptive Communication Scale, Expressive Communication Scale, Articulation Measure, Cognitive Development Measures, Classroom Observation Schedule and Classroom Interaction (the sum of the child-child, child-teacher and teacher-child totals). Programs were ranked from 1(highest) to 7(lowest) for each category and scores were summed across the eight categories. The three programs with the lowest total scores, and highest rankings, were New Mexico, the American School and St. Paul.

Students in the New Mexico program represent the only group which scores at or about the median (four, three, two or one) on all eight measures. Results from this program have consistently been high over the three years of data collection. The investigators plan to spend a considerable amount of time analyzing this program if the results are similar in the 1973-74 evaluation.

The results obtained by students at the American School represent a major improvement in their status, relative to other programs, over previous years. The school staff attributes much of the improvement to the change to a systematic Total Communication program. The investigators also have noted greater consistency among teachers, more organized school days and apparently more effective supervision and coordination of teachers' activities. The greatest apparent weakness seem to be relatively less attention to speech development.

Although St. Paul continues as one of the top three programs,

the results suggest that children in the program are not maintaining the superiority they had exhibited previously. The program now gives relatively less emphasis to academic readiness and organized learning experiences. It will be of great interest to follow the trends of children in this program in the final year of testing.

It is an understatement to say that the authors are looking forward to the results of the final year of testing with great curiosity and anticipation.

Table 33

Ranking of Three Highest Programs by Major Category

Program	ITPA[2]	MRT[3]	Receptive[4] Communication	Expressive[5] Communication	Articulation[6]	Cognitive[7] Development	Classroom[8] Observation	Classroom[9] Interaction	TOTAL
New Mexico	4	1	3	1	3(tie)	3	1	2	18
American	3	2	2	4	5	6	3	1	26
St. Paul	1	6	1	3	2	2	7	4	26

[1]Rated from highest(1) to lowest(7) score in relation to all seven programs.

[2]Table 7

[3]Table 8

[4]Table 12

[5]Table 14

[6]Table 18

[7]Table 20

[8]Table 23

[9]Tables 24, 25, 26.

CHAPTER 6

FUTURE PLANS

The schedule developed in the preparation of the three progress reports has continued to work out satisfactorily and will be followed for the 1973-74 period. Basically, this entails data gathering in the winter and spring, data analysis in the spring and summer, preparation of the progress report in the summer and fall, and dissemination late in the fall. The 1973-74 period represents the final year of data collection and the fall 1974 report will be the final annual progress report. A complete report, covering the five years of the project from 1969 to 1974 and including guidelines for program development, is projected for 1975.

As projected in the 1972 Future Plans Chapter, full scale testing was initiated using the Metropolitan Readiness Tests and the Expressive Communication Scale. In addition, the Receptive Communication Scale was expanded and a Cognitive Development Measure was devised, field tested and utilized. At present, no new instruments are planned for the 1973-74 evaluation, although the Receptive Communication Scale will be further expanded to include passive and negative constructions.

The authors were in communication with the administration of a program which utilized the Verbotonal system. It was hoped that this program would be involved in the final two years of the evaluation beginning in fall 1972. It is with great disappointment that the authors report the hope for participation did not materialize.

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APPENDIX A

Program Sample Days

Sample Day - American School for the Deaf

Submitted by Ms. Carol Robinson

9:00 - 9:40	Greetings. Children learn to put on E.F.I. auditory training equipment and adjust volume with minimum assistance. Prayer and pledge. Helpers take care of responsibilities (calendar and weather chart, plants, etc.) Informal conversation and poems in total communication.
9:40 - 9:50	Motor skills (Gross)
9:50 - 10:40	Individualized reading, writing and number readiness table work. Each child is free to choose a reading, writing or number game to play with when he completes his assignments. Clean-up. Bathroom.
10:40 - 11:10	Recess. Milk and cookies. Bathroom. Children are encouraged to be polite and use appropriate spoken and signed language.
11:10 - 11:25	Each child decides what he wants to write. Teacher helps him say it in good language if he has any difficulty and then the teacher prints it on lined paper. Each child copies his special sentence or traces the letters, depending on his ability.
11:25 - 11:45	Group activities in reading or number readiness.
11:45 - 12:00	Free play and preparation for lunch.
12:00 - 1:00	Lunch and play.
1:00 - 2:30	"Mini-courses" on Tuesday and Thursday. The children go to three one-half hour classes (total of six each week.) Gym is individualized for all children; they are grouped according to their particular needs. Schedules are changed mid-year assuring every child a chance to attend all the "mini-courses" for at least one semester and allowing for re-grouping of gym classes. The classes are: gym, science, art, library, health and safety, practical living, cooking, drama, games.
1:00 - 2:30	Library, art, rhythm and movement and gym on Monday, Wednesday, or Friday afternoon for one-half hour (each activity) with special teachers. The remainder of these afternoons is spent on social studies or science activities, group auditory training games and group speech games.

2:30 - 2:45 Free play at easel, typewriter, workbench, doll house, etc. and preparation for dismissal.

Each child is tutored in speech individually at least once each day. They are given individual auditory training and a chance to work with the "Perceptual Training Unit" of Project Life at least twice each week.

Preschool
Sample Day - Callier Hearing and Speech Center

Submitted by Stephanie Chambers

Morning Session:

8:20	- 8:30	Arrival to central area. Children watch Captioned films appropriate to the approaching holiday season, or field trip, or ones of high interest.
	8:30	Classroom teachers take respective children to classes.
8:30	- 8:40	Bathroom, check each child's hearing aid. This is also a time for informal conversation, show and tell, finding out "who's absent?", and calendar work. The children are encouraged to talk about their interests and news in their families.
8:40	- 9:15	Group activities in classroom experiential activity for language development. After an experience is done early in the week with the children acting it out, the teacher then writes up a story about the experience and reviews it with the children the next day. The stories are then used for speechreading, auditory training and expansion of spontaneous language. The teacher begins another experience later in the week but continues to review the past experience and stories. The sentences from the experience stories are also put on the E.F.I. Language Master and randomly presented to the children as part of their auditory training.
9:15	- 9:40	Some classes begin individual speech, auditory training and readiness activities. Each child receives at least ten minutes per day of individual attention centered around selected phoneme work, advanced or remedial language development, working with Piaget and Kendall Math Materials, or auditory training with the E.F.I. Language Master. Those children who are not receiving individual attention at this time are sent to Learning Centers where creative gross motor, fine motor, sense training and the Frostig Program are offered by teacher aids. The teacher aids are trained in using the same language techniques as the teachers as well as trained in presenting specific gross motor activities, creative activities, etc. The children relate in the various learning centers of their choice. Some children in need of intensive work in a specific area receive individual attention. All children scheduled for the Frostig Program receive individual attention.
9:40	- 10:00	Recess. Free play and cookies.

10:00 - 10:20	Group activities in classroom. Some teachers use this as a story time or auditory training session. A story might be related in the following manner: on Monday the teacher presents the entire story, Tuesday the teacher re-tells the story and the children assist when they can remember, Wednesday the teacher shows pictures and the children respond orally explaining the pictures. A new story might begin on Thursday but the teacher returns to the old story again so the children do not lose the new vocabulary language and concepts of the story.
10:20 - 10:40	More individual work with some children sent to Learning Centers.
10:40 - 11:00	Group work in classroom. Auditory training, question work, new language presented. In auditory training the children listen for language presented by the teacher or the E.F.I. Language Master from a variety of unrelated pictures. The children also attempt to change their pitch, rhythm, and articulation by continuous stimulation from the teacher. New vocabulary might also be presented at this time: adjectives, adverbs, prepositions, nouns, etc.
11:00 - 11:25	Art activity, poems, songs related to new experience and new language. Present ditto of experience story and notes to the children to give to their parents.
11:25	Preparation for dismissal
11:30	Dismissal

Afternoon Session:

12:20 - 12:30	Arrival to central area. Children watch films.
12:30	Classroom teachers take respective children to classes.
12:30 - 12:40	Bathroom, check each child's hearing aid. This is also a time for informal conversation, show and tell, finding out "who's absent?", and calendar work.
12:40 - 1:30	Group activities in classroom. Experiential activity (i.e. Science, Social Studies, Language activities) for language development and experience story. Readiness activities such as Kendall Math, Scott Foresman Reading Series.
1:30 - 2:00	Psycholinguistic teaching activities to build skills measured by I.T.P.A. Skills stressed are Auditory Reception (i.e. the teaching of absurdities and how to answer questions) Auditory Association (i.e. learning the cloze procedure, and making logical conclusions from two related sets of information) Grammatic Closure (i.e. verb tenses, pluralization, comparison of adjectives, etc.) in natural conversation as well as in the cloze procedure , and Verbal Expression (i.e. teaching the child to abstract ideas from concrete objects and relate these ideas verbally).

		Some teachers begin individual work on speech correction, Piaget, and Frostig. The total communication classes divide into small groups to present fingerspelling, matching print to pictures, and the Rebus Reading Program at different levels.
2:00	- 2:20	Recess
2:20	- 3:25	Group activities in classroom. Some teachers doing the individual work described above, other children rotating through Learning Centers. Group activities include creative dramatics, story telling, review of experience stories, (for auditory training and speechreading) and continuation of work on skills related to I.T.P.A.
	3:25	Preparation for dismissal
	3:30	Dismissal

Parent observations are scheduled weekly and bi-weekly depending on the teacher's needs. These sessions include thirty minutes of observation and thirty minutes of discussion with the teacher.

Sample Day - Primary - Callier Hearing and Speech Center

Submitted by Mrs. Rene Ludwig

8:00 - 8:25	Arrival to gym
8:25 - 8:30	Go to classroom building.
8:30 - 8:45	Greeting, take up lunch money Conversation and questions - Did you bring your lunch money? Do you have money for ice cream? Check hearing aids.
8:45 - 9:00	Calendar and weather - oral questions. Discussion of today's activities; what happened yesterday; and what events of interest will happen. Ex. _____'s birthday party; trip to zoo, etc. Discussion of weather conditions.
9:00 - 9:30	Spontaneous conversational period. Lively discussion period to promote interest in teacher and peer activities. Choosing and writing of one or two children's experiences on news pad. (Use for language development.)
9:30 - 10:00	Auditory training and speechreading of children's experience stories.
10:00 - 10:15	Written question of experience stories. Question forms - Who? How many? What color? What? Where? When?
10:15 - 10:30	Recess
10:30 - 11:05	Reading - A diagnostic and developmental reading program by Scott,Foresman and Company.
11:05 - 11:35	Language development activity. Introduction of new material or follow up of previous activities. Ex. Adjectives - expression of feelings - sad, happy, tired, sleepy, angry, etc. (1) Speechreading and reading of phrases and matching to the correct pictures. (2) Dramatization of an adjective by one child; another child identifies the adjective; says the word; and matches print to picture. (3) Written work using elliptical sentences.
11:35 - 11:40	Preparation for lunch
11:40 - 12:10	Lunch

12:00	- 12:20	Rest period
12:20	- 12:50	Speech and Auditory Training - words and phrases from reading series.
12:50	- 1:00	Individual speech on specific sounds.
1:00	- 1:15	Individual work in visual - perceptual activities.
1:15	- 1:30	Recess
1:30	- 2:00	Kendall Math - Group and individual seat work
2:00	- 2:30	M.W.F. AAAS Science - a process approach. T. Th. Social Studies
2:30	- 2:40	Preparation to go home.

The reinforcement of speech and natural language is used in all daily activities.

Sample Day - Callier Hearing and Speech Center - Individualized Instruction Project

Submitted by Marilyn Harms

8:30 - 10:00 Language and Reading

During this time span, Child is involved in speech-reading, auditory training and oral response. These activities are always correlated to specific language objectives. After group work, Child goes to an assigned learning center where activities reinforce the language principles with which he is working.

The remainder of the period is either reading or more language. These often overlap in auditory training and sequencing for language and picture relations.

Concept development is worked on during language along with categorizing.

An EFI Flash Card Reader is used in one of the learning centers for reading and language auditory training exercises. Other learning centers contain the language filmstrips for Project LIFE and paper pencil programs developed at Callier.

The Scott Foresman Reading Series, Open Highways, is used as the basal reading text.

10:00 - 10:30 Basic Skills

During this time period, Child works at the Frostig Center on visual-motor coordination, figureground, spatial relationships and perceptual constancy.

10:30 - 10:45 Recess

10:45 - 11:30 Math

Child works in a group and independently during math. Before any concepts are taught, a pretest is administered to establish his needs. After concepts are taught, a posttest is given to establish mastery. At this time, most materials are teacher made. We are in the process of adopting a new math series for the 1973 - 1974 school year.

* The first name of the specific child mentioned in this sample day has been omitted for purposes of this report.

11:30 - 12:15 Basic Skills

At this time, Child works at the Project LIFE center using the Thinking Skills filmstrips. He also works at the DLM block center. This area is for sensory integration. There are activities for pegboards, small and large parquetry, plain and colored cubes, small mosaics and tangrams.

12:15 - 12:45 Lunch

12:45 - 1:15 Recess

L;15 - 2:00 Science/Social Studies

Science AAAS is used as the basis of our science program. Most of the time is spent in small group work with the teacher.

Social Studies Child has one session a day in group work with the teacher and then rotates from station to station within the room. Once a week Child is pulled for speech work.

2:00 - 2:40 Basic Skills

Child works in the visual functions center during his last period in this area. He works on visual memory activities and closure activities.

Sample Day - Maryland School for the Deaf

A. Submitted by Ms. Karen Brubaker

Beginning of year:

8:00 - 8:30	Greet children at door and assemble them in circle as group. This time is used to familiarize children with headphones - so help them put on the headphones and halters using a lot of speech to note their responses to sound and encourage them to vocalize. This is also an informal conversation period where children are encouraged to express themselves about anything. In the beginning of the year this is a get acquainted time.
8:30 - 9:00	Introduce calendar. Days of week are identified by something that the children experienced, e.g., if they played a ball game, I would draw a simple picture portraying this and then ask them "What happened?" and encourage discussion; later put it into sentence which is spoken and signed. Also introduce flag; each day a different child is responsible for holding the flag, children say "I love the flag of red, white and blue." If time permits, do an activity using names (name sign) of children and teachers to help them learn each other's names.
9:00 - 9:45	Free play. Various types of toys and equipment are available, many of which are language stimuli. Children are fairly unsupervised but teacher is there to settle conflicts and involve isolates in group play. But, children may do what they wish. (This time used to test children on communication skills individually.)
9:45 - 10:10	Clean up. Children are expected to put away all toys in proper place and straighten up room They need help with this in the beginning. When finished they wash hands and sit down at tables for snack. Children must say please, thank you, ask for snack in complete sentence. Children are assigned to give out napkins and take around wastebasket when finished.

10:10 - 10:30	Some sort of imitation game where children are encouraged to watch teacher and repeat what she does. This habit, when formed is helpful (necessary!) in speech, lipreading and signing.
10:30 - 10:45	BREAK - Recess for children and teachers.
10:45 - 11:20	Get on headphones again, assemble in group for language activity. Emphasis first on spoken and signed word, later introduce printed word. Activity is not part of a major unit as such but has a theme and supplies words they can use every day. After first week of school, unit on home and family is begun.
11:20 - 11:50	Number activity (usually begin with 1 and 2 and introduce zero) or manipulative activity at tables such as matching colors or objects; more advanced children can do simple work-sheets. Time for visual perception work. Individual speech work with teacher aide with group.
11:50 - 12:00	Clean up and get ready for lunch.
1:00 - 2:00	Art activity. Either geared to improve motor control and encourage children to use imagination or else very free, abstract (collages, e.g.) which gives child more creative freedom, does not require as much motor control.
2:00 - 2:30	Organized game, outside if nice. Sometimes this is a physical education class with other children. Or else, more structured play indoors with learning games, puzzles, seat games. Sometimes this is naptime in beginning of school year.

Middle of year: Attention spans are longer, children are able to stay in group longer and work more independently.

8:00 - 8:20	Informal conversation time and putting on headphones.

8:20 - 9:20	Calendar work (now ask children what to draw on calendar, greater discussion, put into written sentence) discussion of today, tomorrow, yesterday. Discuss weather, refer to helper chart for daily duties. Then have language activity, usually in connection with a unit. Lesson encourages participation of children and is not 100% teacher directed. Involves spoken, signed and written language and lipreading, appropriately developed. Also, write news stories from home on Mondays and usually work on reading comprehension Tuesday.
9:20 - 10:00	Free play or rhythm class, clean up, snack.
10:00 - 10:30	Short general language activity not unit oriented. Something like use of new question word, preposition or else practice in a weak area like reading words introduced before that present a problem or fingerspelling. This is not drill work but is always done in context of a game or an activity that children participate in themselves.
10:30 - 10:45	Recess.
10:45 - 11:20	Speech therapist and/or individual work. Group (remedial) is usually divided here. This time also used to teach children manuscript or work on hand coordination. If no speech therapist, teacher does speech work and aide takes rest of group reviewing some sort of material introduced before. Also go to library at this time. When entire group is present we do work with learning stations.
11:20 - 12:00	Number work (more advanced; larger numbers, making sets, equivalencies, using Cuisenaire rods, eventually making equations). Get ready for lunch.
1:00 - 2:30	Activity usually connected with a unit but less structured, allowing more freedom. Often act out stories we have read or seen on film strips or do on art activity connected with unit. Also a time to show movies, filmstrips, go on field trips (post office, fire house, pet shop, dairy, farm, grocery store, visit the policeman) or nature walks.

Always followed up by writing an experience story the following day.

Individual speech work is child oriented. When communication is sophisticated enough, I will ask him what he'd like to talk about, then work on saying key words, record in speech book under appropriate sound but put key word (e.g., postman) in a sentence and practice saying complete sentence. Sentence would be recorded on page marked P.

At first, child cannot give as much spontaneous language so I try and choose words relevant at the time. I don't start with vowel sounds, then consonants, and work up the list. I try and include all sounds but not in any prescribed order. If child wants to talk about it, we talk about it!

B. Submitted by Ms. Carol Bailes

8:00	Headphones
8:15 - 8:45	Opening: this includes flag, weather, and calendar (days of week) writing short news - one or two sentences from day before; this is a good time to get spontaneous expressive language from the children using Total Communication. They are asked, "what happened yesterday?" and then they are able to discuss the activity or activities that they liked and remembered most from the day before. The children stimulate each other because one idea reminds another child of another details to add. The teacher summarizes in one or two sentences what the children say and writes it on a chart. The idea of this activity is not to write all the child's language; the aim is to get the children discussing freely. During this time, while the aide has opening, the teacher is able to work on speech individually in the tutoring room. The child uses amplification and both the child and teacher use speech and signs. It is child-centered with the child deciding which words are worked on; this has worked best for me because this way the child picks words that are meaningful to him. The words the child picks are usually from a current unit or have to do with a special interest of the child. The child gives the sign for a word. The teacher writes it in a book and either draws the picture or uses one from a dictionary. The teacher and child then, using signs and speech, work on the pronunciation.
8:45 - 9:30	Language development activity: either introduce new material or follow-up. For example, Monday we write the news from the weekend. Then on Tuesday, we reread the news and have activities on the material (questions, small skits, true and false, etc.) and vocabulary. We usually work with the class as a group at this time. If the aide is not needed, she can take one or two children for individual work.
9:30 - 9:55	Free play.

9:55 - 10:05	Clean-up.
10:05 - 10:15	Snack.
10:15 - 10:30	Short filler activity, usually in the form of a game. Either a short review of activity from day before, or fingerspelling names, lipreading and numbers (if no number activity is scheduled for later).
10:30 - 10:45	Recess.
10:45 - 11:25	Auditory training.
11:25 - 12:00	Number activity, science activity. During this time of day, depending upon the type of activity, we do more in small groups instead of with the class as a whole. Another different type of language activity - this is usually the best time of day to read a book using the opaque projector. The children see the pictures projected on the screen and the teacher signs and talks about what is happening. If it is an easy reader type of book with a few large simple words that the children can easily see, I sign the story according to the written text and draw the children's attention to the printed words. If the children particularly enjoyed a story, we show it again the next day with the children taking turns telling about what happened using signs and speech. We also do review for different language units at this time. On Monday, we have library where the children either choose books or see filmstrips correlating to current units; the teacher signs and talks about the filmstrips. If the class has been exposed to the material before, I try to ask leading questions so they can explain what is occurring. Twice a week, for half an hour, half of the class leaves for speech work. The other children work on printing at this time because they can get more individual attention.
12:00 - 1:00	Lunch.

1:00 - 2:30	This time of the day is most unstructured. We do a lot of creative art work at this time as follow-up for language activities. The children can also see Project LIFE filmstrips, play games with numbers and vocabulary, or act-out different short stories. This is also the time of day when if we read a story or watch a filmstrip, the children draw or paint pictures pertaining to the story. We also play certain games to develop visual skills, perception, motor coordination, color discrimination, classification skills, and shape discrimination and perception. Twice a week, 1:45 - 2:30, we have physical education.

DAILY LESSON PLANS

Shirley Parker/Mary Nygaard
Lyndale School

Monday	Tuesday	Wednesday	Thursday	Friday
Arrival - Toileting Hearing Aid Check Free play Clean up Group Language	Arrival - Toileting Hearing Aid Check Shop Clean up Group Language	Arrival - Toileting Hearing Aid Check Free play Clean up Group Language	Arrival - Toileting Hearing Aid Check Shop Clean up Group Language	Arrival - Toileting Hearing Aid Check Free play Clean up Group Language
Snack Gym Book Time Reading Readiness	Snack Motor skills Book Time Math	Snack Motor skills Book Time Reading Readiness	Snack Art Book Time Motor Skills	Snack Motor skills Book Time Reading Readiness
Creative Activities Art clay and paint projects, dramatics, etc. Readiness for lunch Lunch	Creative Activities Art clay and paint projects, dramatics, etc. Readiness for lunch Lunch	Creative Activities Art clay and paint projects, dramatics, etc. Readiness for lunch Lunch	Math Readiness for lunch Lunch	Creative Activities Art clay and paint projects, dramatics, etc. Readiness for lunch Lunch
Outside activity Free play Clean-up and attendance Language arts	Hearing peers from neighborhood join group Clean-up and attendance Language arts	Outside activity Free play Clean-up and attendance Language arts	Hearing peers from neighborhood join group Clean-up and attendance Language arts	Outside activity Free play Clean-up and attendance Language arts
Story Time Dismissal readiness readiness	Story Time Dismissal readiness	Story Time Dismissal readiness	Story Time Dismissal readiness	Story Time Dismissal readiness
Dismissal	Dismissal	Dismissal	Dismissal	Dismissal

DAILY LESSON PLANS

New Mexico School for the Deaf
Submitted by Mrs. Evelyn B. Measeles

Monday	Tuesday	Wednesday	Thursday	Friday
News Colors: Group 2 Vocabulary: Group 1	News is are - houses write - plurals (1) How many: what color what: Group(2)	News is are - pumpkins plurals and phrase work Group(1) How many: what color what Group (2)	News Sesame Street Identify & learn char. faces - write words(2) story-2 sentence (1) Yes & No questions	News Sesame Street Char. Letters home
Up/Down Faces: hands,arms, hand, arm	Faces: Use f.s. review (Group 1) Group 2-review paper Group 1-questions 3 sentence stories	Faces: Read yes & no statements f.s. Introduce slow plurals- Group 2	Sentence writing (1) How many? What color? What? Emphasize plurals (2)	Letters home Work - Group 2 How many? What color? What? (plurals)
How many? what color? what? ok Both groups	Vocabulary work Group 2 and with BOARD Group 1	Readings: The Three Pigs More participation Dramatize Today from Langa. Allow	Readings: The Three Bears Introduce Bear Reemphasize house, window, door	Group 1 - Reading stories, answering questions-yes & no Begin questions with: Is _____? yes no And from cards.(1)
is-are Group 1 Reading f.s. Group 2 Lunch	Go to Library. Lunch	Speech Lunch	Speech Lunch	Speech Lunch
and - introduce Group 1 Vocabulary drill Group 2	Read: The Three Pigs Dramatize - house, window, door Numbers-teacher made for counting	Numbers Group 1 -Addison Wesley Group 2 -McCormick Mathers Sharla Color by Direc- tion	Numbers Reading faces Call attention People - animals New words man	Readings: The Three Bears - Call attention window boxes-barrel water-window-door How many? What color? What is in the window box?
	Recess duty	Teachers' meeting		Recess

Sample Day - New Mexico School for the Deaf - Albuquerque Preschool

Submitted by Donna Groves, Supervising Teacher

The following is an outline for the 6 year old group:

9:00	-	10:00	Calendar work, News (writing original language about their own experiences), writing drill, speech work.
10:00	-	10:30	Recess
10:30	-	11:15	Open classroom
11:15	-	12:00	Math, structured language work.
12:00	-	1:00	Lunch
1:00	-	1:45	Reading
1:45	-	2:30	Auditory training, speech, finishing materials which had been started earlier in the day, individual work with a child who might be having difficulties in some area of academic work

OPEN CLASSROOM

The following centers were available to the children in the Open Classroom Area:

Housekeeping Area and Dress-Up Clothes

Wood Working Area

Movie Area

Loop Films on Visual Perception and Speech Reading Activities

Library Area

Game Area

Science Center

Growing of plants, animals, use of magnifying glass and magnets, discovering what objects will float in water and which will sink, temperatures and how they effect us, etc.

Teaching Machine Area

To help reinforce vocabulary.

Sample Day - New Mexico School for the Deaf, Albuquerque Preschool

Submitted by Donna Groves, Supervising Teacher

The children included in the study were provided academic subjects in the classroom situations and "free play" experiences in the Open Classroom situation.

The Academic Subjects included: Auditory Training, Speech, Speechreading, Fingerspelling, Signs, Writing, Numbers, Reading, Language, Sense Training Activities, and Spelling.

How and when this material was presented to the class was left primarily to each teacher's own schedule. The time when each class went to the Open Classroom situation was set for the school year.

The following is an outline for the 5 year old group:

9:00 - 10:00	Spelling, structured language work, Show-and-Tell Writing.
10:00 - 10:30	Recess
10:30 - 11:45	On various days of the week the following materials were presented to the class: Auditory Training, Speech, Speechreading of Vocabulary, Sequencing stories, letters, numbers, workbook activities, etc.
11:45 - 12:00	Reading. Pre-primer and corresponding materials are presented: question forms, workbook activities, acting out stories, reading to each other, etc.
12:00 - 1:00	Lunch
1:00 - 1:45	Original News - language. Language Principles: Prepositions, Adjectives, Verbs. One day a week was spent on Sense Training Activities.
1:45 - 2:30	Open Classroom

Unit Center

Directed work by the teacher on building vocabulary through spelling. Units covered: Transposition, Verbs, Adjectives, Prepositions, Clothing, Months of the Year, Animals, etc.

Grocery Store

Needless to say, all these Areas were not presented at the first of the school year. As the children learned to handle several areas a new one would be opened to them.

Preschool Program
Rochester School for the De-
1972-1973

Submitted by Eleanor Scouten
Supervising Teacher

The preschool population at the Rochester School for 1972-73 is made up of 48 pupils ranging from 3-7 years:

12 nursery pupils
20 kindergarten pupils
14 preprimary pupils

Of these children, 25 are day and the rest are residential. The day-nursery pupils attend a half-day program while the day-residential pupils attend a full day-regular and reinforcement classes. All others have a full day program.

The program itself is made up of three different parts:

1. Socio-emotion adjustment program with activities for improving attention span, creativity, frustration level and other maturation characteristics.

2. Readiness program with graded activities in visual analysis, conceptualization, motor coordination and sensory motor integration, thus preparing the pupils for the cognitive area.

3. Language-centered program which concentrates on early introduction of sight vocabulary which is correlated with Fitzgerald Key concepts. Syntax development is emphasized with the children learning several sentence patterns as well as first grade reading.

4. Speech-auditory training program which features consistent amplifi- Although the pupils learn vowels by the Alcorn symbol system, greater emphasis is placed on the synthetic approach with the children learning words, phrases and concentrating on rhythm and inflection in speech. In addition to the speech in the classrooms, individualized speech is conducted by three speech therapists.

Added features of the program include rhythm, dance, video and Piaget activities. Parent contact is made through evening programs, parent conferences, home visits and reinforcement materials for work at home.

Referrals are made to the school's primary department and to Rochester City School #31.

Daily Schedule

Primary H-I

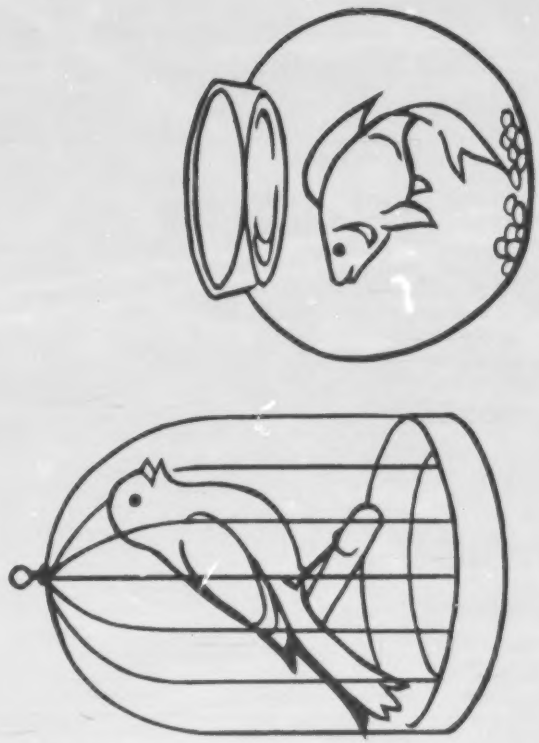
Room 209 - Pam Kaufman

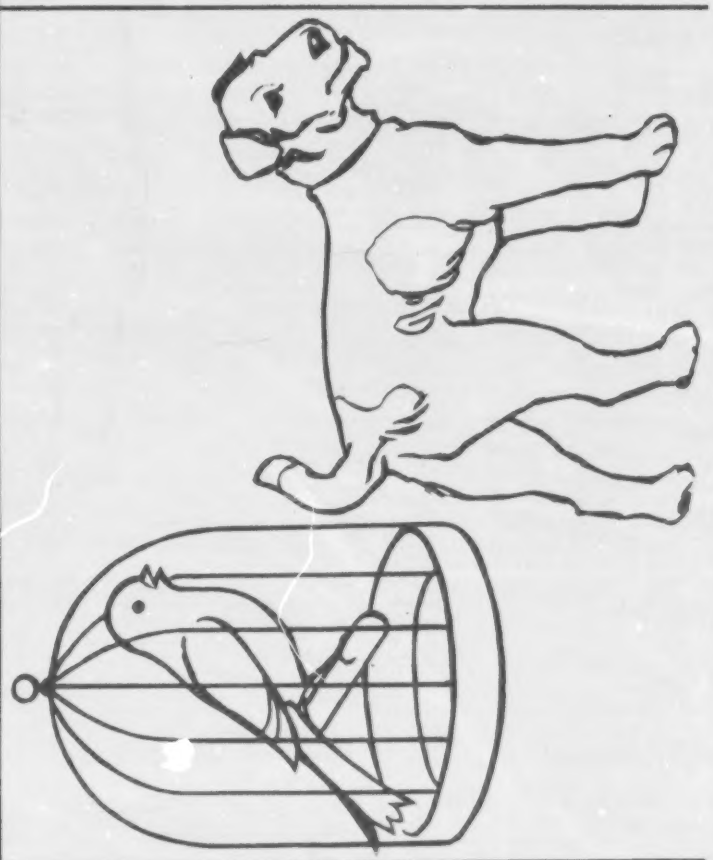
8:30	- 9:15	Arrival - Breakfast Language through News (specifit language skills developed weekly)
9:15	- 10:35	Reading
10:35	- 11:00	Math
11:00	- 11:30	Speech and Speechreading
11:30	- 12:00	Lunch
12:00	- 12:30	Outside - free play
12:40	- 1:10	Spelling
1:10	- 1:30	Independent writing: formulation of news sentences. (grammar and printing incorporated)
1:30	- 2:00	Gym with a hearing 2nd grade class
2:00	- 2:30	Science Unit/Social Studies Unit (alternating) emphasis on language
2:30	- 3:00	Mon. and Fri. - Music and Rhythm (3 deaf classes) (team teaching)
		Tues., Wed. & Thurs. - Art Learning games Stories "fun sheets" Other Misc.

APPENDIX B

Sample Page

Receptive Communication Test





APPENDIX C

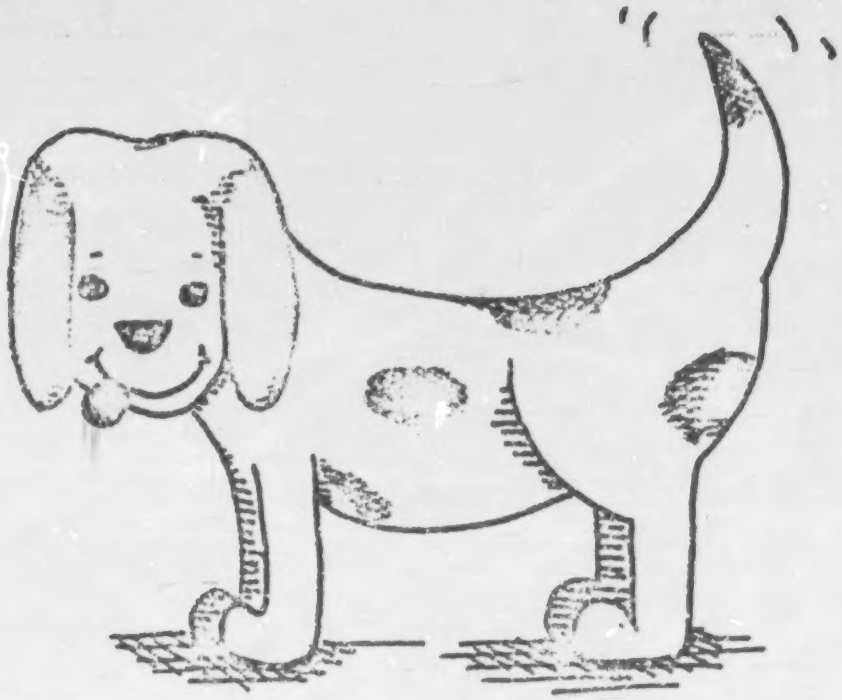
Sample Stimuli

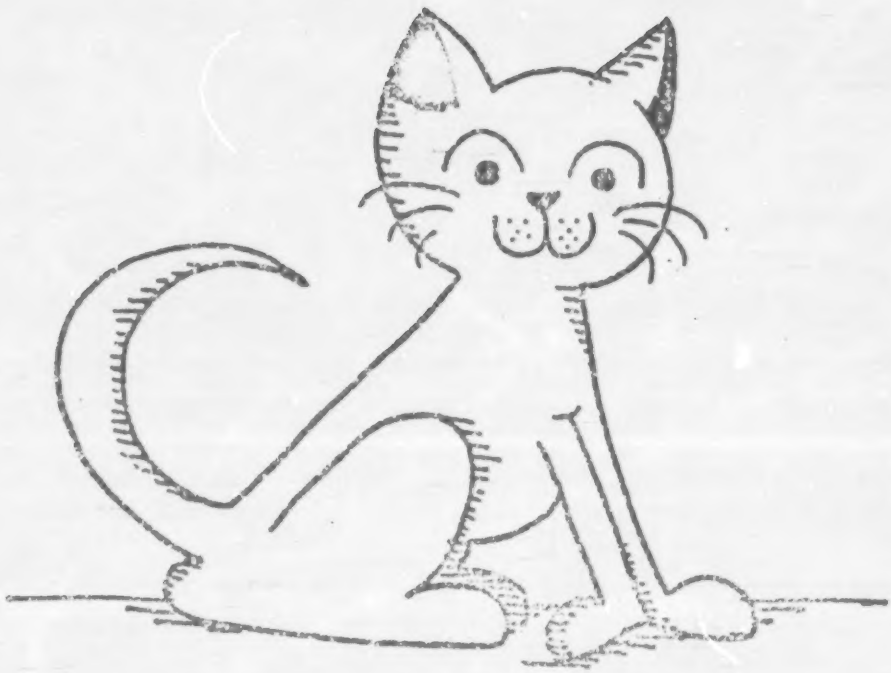
Expressive Communication Scale

APPENDIX D

Sample Stimuli

Articulation Test





Appendix D

Articulation Test - Raters' Word List

AIRPLANE	BOAT	DOG	HAT	POP
APPLE	BOOK	DOOR	MAN	RED
BED	CAT	EYE	MILK	SHOE
BIRD	CUP	FISH	PIE	TOP
BLUE	DISH	FIVE	PIG	TWO

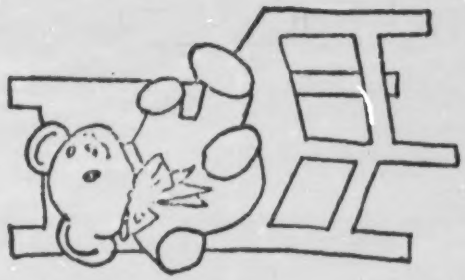
APPENDIX E

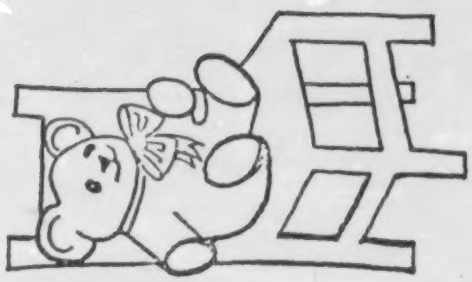
Sample Page

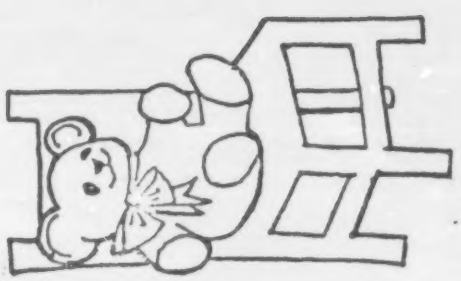
Matching Familiar Figures Test

STANDARD

ALTERNATE CHOICES







Appendix F

Classroom Observation Schedule (Revised)

Teacher: _____ Observer: _____

District: _____ Date: _____ Time Start _____ Time Finish _____

No. of Children: _____ Supporting Staff: _____

DAILY PROGRAM

Listed below are a number of activities that may be included in the daily program of pre-kindergarten class. Indicate by number the sequence of activities in the session observed and the amount of time spent on each. Add activities not listed in spaces provided.

Order	Activity	Minutes	Order	Activity	Minutes	Order	Activity	Minutes
____	F.S. expr.	____	____	_____	____	____	_____	____
____	F.S. rec.	____	____	_____	____	____	_____	____
____	Signing expr.	____	____	_____	____	____	_____	____
____	Signing rec.	____	____	_____	____	____	_____	____
____	Writing	____	____	_____	____	____	_____	____
____	Speech	____	____	_____	____	____	_____	____
____	Lipreading	____	____	_____	____	____	_____	____
____	Auditory Trng.	____	____	_____	____	____	_____	____
____	Reading Readiness	____	____	_____	____	____	_____	____
____	Number Work	____	____	_____	____	____	_____	____
____	Free play	____	____	_____	____	____	_____	____
____	Role Taking	____	____	_____	____	____	_____	____
____	Date & weather check	____	____	_____	____	____	_____	____
____	Group Discussion	____	____	_____	____	____	_____	____
____	Story time	____	____	_____	____	____	_____	____
____	Tioleting	____	____	_____	____	____	_____	____
____	Snack	____	____	_____	____	____	_____	____
____	Rest Period	____	____	_____	____	____	_____	____

EQUIPMENT AND MATERIALS

Listed below are materials and equipment that may be found in a pre-kindergarten classroom. Check those seen in this classroom (x) and double check those used during the observation period (xx). Add items not listed in the spaces provided.

_____ Large blocks	_____ Jungle gym, climbing ladder	_____ Color charts
_____ Small unit blocks	_____ Carpentry bench	_____ Labels
_____ Books	_____ Water play utensils	_____ Picture puzzles
_____ Record player, tape recorder	_____ Rhythm band instruments	_____ Lotto games
_____ Paints	_____ Puppets	_____ Flannel board
_____ Crayons	_____ Wheel toys	_____ Plants
_____ Pencils	_____ Readiness workbooks	_____ Live animals
_____ Feltpens	_____ Readiness materials	_____ Manipulative toys
_____ Play dough	_____ Ditto masters	_____ Northampton Chart
_____ Clay	_____ AV projectors	_____ Fitzgerald Key
_____ Scissors	_____ Overhead projector	_____ _____
_____ Housekeeping corner	_____ Auditory unit	_____ _____
_____ Dress-up clothes	_____ Audiograms	_____ _____
_____ Pupil name cards	_____ Pupil records	_____ _____

Never to Frequently

CLASSROOM ORGANIZATION

1. Teacher plans activities for the group as a whole. - - - - 1 2 3 4 5 6 7

2. Teacher singles out individual children for: tutoring - - 1 2 3 4 5 6 7

3. Supporting - 1 2 3 4 5 6 7

4. Teacher shifts the organizational pattern (individual - small groups - entire group) according to the activity. - - - - - - - - - - - - - - - - - - 1 2 3 4 5 6 7

5. Teacher shifts the organizational pattern (individual - small groups - entire group) according to the needs of the children - - - - - - - - - - - 1 2 3 4 5 6 7

6. Spontaneous, independent work by the children does occur - 1 2 3 4 5 6 7

7. Spontaneous independent work by the children is allowed - 1 2 3 4 5 6 7

8. The program gives an impression of good planning. - - - - 1 2 3 4 5 6 7

9. The program appears to be well executed. - - - - - - - - - 1 2 3 4 5 6 7

USE OF SUPPORTING STAFF

10. Supporting Staff works in a supportive manner. - - - - - - 1 2 3 4 5 6 7

11. Supporting Staff performs housekeeping functions. - - - - 1 2 3 4 5 6 7

12. Supporting Staff assists in maintaining discipline. - - - 1 2 3 4 5 6 7

13. Supporting Staff prepares teaching materials. - - - - - - 1 2 3 4 5 6 7

14. Supporting Staff has responsibility for special portions of the educational program. - - - - - - - - - - - - - - - 1 2 3 4 5 6 7

15. Teacher and Supporting Staff function as a team, shifting responsibilities according to the needs of the children - 1 2 3 4 5 6 7

DISCIPLINE & CLASSROOM RELATIONSHIPS

*16. Teacher admonishes the children for misbehavior. - - - - - 7 6 5 4 3 2 1

*17. Teacher threatens and cajoles. - - - - - - - - - - - - - - - 7 6 5 4 3 2 1

*18. Teacher controls through reiteration of the expectations of "good" and "grown-up" boys and girls. - - - - - - - - - 7 6 5 4 3 2 1

19. Conforming behavior is rewarded. - - - - - - - - - - - - - - 1 2 3 4 5 6 7

Never to Frequently

20. Teacher avoids problems by changing the pace of the program. - 1 2 3 4 5 6 7

21. Teacher quickly reprimands those who depart from the group pattern. - 1 2 3 4 5 6 7

22. The children cooperate readily. - - - - - - - - - - - - - - - 1 2 3 4 5 6 7

*23. A laissez-faire attitude prevails in the classroom.- - - - 7 6 5 4 3 2 1

24. Teacher places restrictions on the children's behavior.- - 1 2 3 4 5 6 7

STRUCTURING PROGRAM

25. Teacher emphasizes diverse experiences for general enrichment. - 1 2 3 4 5 6 7

26. Children's activities have discernable objectives related to apparent needs. - 1 2 3 4 5 6 7

27. Teacher relies primarily on children's responses to determine her teaching goal at a given time. - - - - - - - - - - 1 2 3 4 5 6 7

28. Teacher evidenced specific instructional goals.- - - - - - 1 2 3 4 5 6 7

29. Teacher focuses attention on the objectives: Through defining the time period of the activity.- - - - - 1 2 3 4 5 6 7

30. Through the use of special materials.- - - - - - - - - - - - 1 2 3 4 5 6 7

*31. Through prescribing the child's responses. - - - - - - - - - 7 6 5 4 3 2 1

32. Teacher utilizes both enriching experiences and instructional activities.- 1 2 3 4 5 6 7

ENCOURAGING LANGUAGE AND SPEECH DEVELOPMENT

33. Teacher takes advantage of spontaneous language learning opportunities. - 1 2 3 4 5 6 7

34. Teacher makes provisions for language development: Through discussions, question and answer period. - - - - - 1 2 3 4 5 6 7

35. Through planned exposure to concepts.- - - - - - - - - - - - 1 2 3 4 5 6 7

36. Teacher gives the child controlled practice in the use of selected terms and concepts in order to establish specified language patterns. - - - - - - - - - - - - - - - - - 1 2 3 4 5 6 7

Never to Frequently

REACTING TO PUPIL NEEDS

37. In planning and carrying out the program, teacher takes into account: The developmental status of the children. - 1 2 3 4 5 6 7

38. The children's particular impairments. - - - - - - - - - - - - 1 2 3 4 5 6 7

39. Teacher modifies her behavior to the children's needs and reacts: In small groups - - - - - - - - - - - - - - - - - - 1 2 3 4 5 6 7

40. Entire group - 1 2 3 4 5 6 7

41. Individually - 1 2 3 4 5 6 7

42. Teacher uses his capacity to receive children's communications. - 1 2 3 4 5 6 7

*43. Teacher domineers - 7 6 5 4 3 2 1

COMMUNICATION ANALYSIS

	Child to Child	Child to Teacher	Teacher to Child
Finger-Spelling	1 2 3 4 5 6 7*	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Sign-language	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Oral-Aural	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Combined	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Written	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Gestures	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7

* 1 - 7
Never to Frequently

	Child to Aide	Aide to Child
Finger-Spelling	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Sign-Language	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Oral-Aural	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Combined	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Written	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Gestures	1 2 3 4 5 6 7	1 2 3 4 5 6 7

Appendix G

PARENTAL INFORMATION AND ATTITUDE SCALE

FOR PARENTS OF HEARING IMPAIRED CHILDREN

Donald W. Brown, Ph.D.
Associate Professor
The Graduate School
Gallaudet College
Washington, D. C.

Name of organization or meeting at which you received this questionaire _____

_____

GENERAL INFORMATION

Part I.

Note: Please do not put your name or address on this form. All information will be treated confidentially and will be used only for purposes of scientific research.

1. Sex: Male _____ Female _____ 2. Year of birth _____ 3. Year of marriage _____

4. Living with spouse at spouse at present time. Yes _____ No _____

5. Married more than once. Yes _____ No _____

6. If married more than once, was previous marriage ended because of:
   Death _____ Divorce _____ Other (please state) _____

7. Draw a circle around the number of years of schooling you have completed.

12345678	1 2 3 4	1 2 3 4	1 2 3 4
Grade School	High School	College	Graduate Work

8. Religious affiliation:
   _____Protestant _____Jewish _____None
   _____Roman Catholic _____Other

9. Present family income (annual)

   _____ under $3,000
   _____ 3,000 to 4,999
   _____ 5,000 to 6,999
   _____ 7,000 to 8,999
   _____ 9,000 to 10,999
   _____ 11,000 to 14,999
   _____ 15,000 or over

10. Husband's occupation (Be specific such as Drug Store Clerk, College Professor, Automobile Mechanic, etc.) _____

11. Wife's occupation _____
    Full time _____ Part time _____

Note: In the following questions the child referred to is always your hearing impaired child.

12. Child's position in the family (1st born, 2nd, etc.) _____

13. Child's birthdate _____ Age _____

14. Age of child when hearing loss occured _____ was diagnosed _____

15. How many physicians or specialists did you visit before hearing loss was identified _____

16. Degree of child's hearing loss: Profound _____ Severe _____ Moderate _____
Mild _____ Average loss for speech frequencies (if known)
Right ear _____ dB Left ear _____ dB
Deaf _____ Hard of Hearing _____

17. To whom did you originally go when you suspected a hearing loss:
Pediatrician _____ Otologist _____
General Practitioner _____ Hearing Aid Dealer _____
Audiologist _____ Speech & Hearing Center _____
Friend or relative _____ Other _____

18. What diagnoses other than hearing loss were given; e.g. mental retardation, "slow development" _____
By whom _____

19. Who gave the diagnosis of hearing impairment? _____

20. Are any members of Wife's family deaf or hard of hearing (Do not include elderly relatives who lost hearing late in life)
Yes _____ State relationship _____ No _____

21. Are any members of Husband's family deaf or hard of hearing
Yes _____ State relationship _____ No _____

22. When you were a youngster did you know any deaf children or adults?
Yes _____ No _____

23. During any part of your life have you known a deaf person? Yes _____ No ____
If Yes, give name(s) _____

24. Prior to the discovery of your child's hearing loss had you ever seen a magazine or journal about deaf children or adults? Yes _____ No _____
If Yes, give name(s) _____

25. Since learning of your child's impairment have you read any of the following: (Please check those which you have read)
_____ American Annals of the Deaf _____ Teacher of the Deaf
_____ Deaf American (Silent Worker) _____ Volta Review
_____ Exceptional Children _____ Other
_____ Books Specify title(s) _____

26. Do you subscribe to any of the above periodicals? Yes _____ No _____
If Yes, give name(s) and length of time during which you have subscribed.
_____

NOTE: The following questions assume that your child is presently enrolled in a program for the hearing impaired. If this is not the case, answer the questions in terms of the program your child will be entering.

27. At what age did your child begin his education as a hearing impaired child

_____.

28. Have you ever visited a school or class for hearing impaired children other than the one in which your child is enrolled? Yes _____ No _____
If Yes, please give name(s) _____
Age level(s) of class(es) visited _____

29. Please give the names of at least three other schools, classes, or programs (in this state) that your child could have been enrolled in if you had not chosen the one he is presently attending _____
_____
_____

30. How did you first hear about the program your child is attending?
_____
_____

31. Did anyone encourage you to send your child to his present school?
Yes ____ No ____ If Yes, state relationship of the person(s)_____
_____

32. Have you visited your child's classroom? Yes ____ No ____ If Yes, approximately how many times _____

33. Has anyone suggested that you enroll your child in a program other than the one he is attending? Yes ____ No ____ If Yes, what was the relationship of that person to you and what type of program(s) did he (she) suggest? _____
_____
_____

34. Would you please rate the amount of confidence you have that you made the correct decision in placing your child in the program he is now attending:
_____ Very confident
_____ Fairly confident
_____ Slight lack of confidence
_____ Serious lack of confidence

35. Have you seen any television programs about deaf children or adults or with a deaf character? Yes _____ No _____

36. Which of the following conditions do you feel is the most educationally handicapping for a young child? (Check one)
_____Deafness
_____Blindness
_____Cerebral Palsy
_____Rheumatic Fever

37. What does the name Gallaudet mean to you? _____
_____

38. Are you a member of the Alexander Graham Bell Association for the Deaf?
Yes _____ No _____

39. Do you belong to any association of parents of deaf or hard of hearing children?
Yes _____ No _____ If yes, give name(s) _____
_____

40. Have you ever known a deaf person who is a parent of deaf or hearing children?
Yes _____ No _____

YOUR CHILD THIRTY YEARS FROM NOW

Part II.

What will your child be doing thirty years from now? Knowing your child, you may be able to make some good guesses. Place an (X) in the column which indicates the degree of chance you feel there is that the statement will be a true description of your child thirty years from now. If you and your spouse disagree, give both answers and place an (H) after husband's choice and (W) for wife's.

	Very good chance	Fairly good chance	Some chance	A little chance	No chance at all
1. Will be a college graduate					
2. Will have speech that is easily understood by most people					
3. Will read at about fifth or sixth grade level or below					
4. Will use sign language as his preferred means of communication					
5. Will have more deaf friends than hearing friends					
6. Will be active in PTA, Rotary, Kiwanis or other similar organizations					
7. Will know his neighbors well					
8. Will be thought of as having normal hearing by people who meet him					
9. Will have graduated from a regular high school					
10. Will drive a car					
11. Will depend on speech reading more than on his hearing					
12. Will be married to a person with normal hearing					
13. Will be employed in a semi-skilled or skilled job rather than a profession					
14. Will be close to his brothers and sisters					
15. Will have difficulty in using English correctly					
16. Will be in good health					
17. Will use both oral and manual communication					
18. Will keep in touch with me					
19. Will belong to organizations of deaf and hard of hearing					

Part III.

Many statements and opinions have been expressed about hearing handicapped people. We are interested in learning the reactions that you, as the parent of a hearing impaired child, would have to the following statements. Please read each statement carefully. Circle the letter in front of the response which best expresses what you think of or would do about the statement.

In completing this form, please keep the following points in mind:

1. Everything you write will be kept confidential.

2. Try to circle one response for every question. (If you skip a statement, we will not know what you meant.)

1. Alexander Graham Bell, inventor of the telephone and strong supporter of teaching speech to deaf children, once said that finger spelling was the fastest and most efficient way to teach language to deaf children

   a. I think he was probably right
   b. I find it difficult to believe that he ever said that
   c. He meant this only for retarded or slow learning deaf children
   d. This is interesting but probably needs some research to prove it or disprove it
   e. Such a statement proves that he never truly believed in the importance of speech

2. Stuckless and Birch (University of Pittsburgh) report that their study has indicated that manual communication (sign language and finger spelling) does not hinder the development of speech in young deaf child

   a. I'd like to get the opinion of the principal of my child's school on that
   b. This is reassuring because I've wondered about that
   c. They probably didn't do a very careful study
   d. They mean that this is true if the child has already developed speech before he is exposed to manual communication
   e. This sounds like propaganda to me

3. There is so much disagreement about education of the deaf that the best thing to do is:

   a. Be sure I've picked the best school and then get information from that school's staff
   b. Read everything I can and then just trust that I've done the right thing
   c. Find out what approach has the most supporters and try that first
   d. Realize that what seems to be best for others may not be best for my child
   e. Read everything I can and then get the opinion of a school principal or superintendent

4. Some people have said that many fewer deaf people than hearing people are able to go to college

   a. This is probably true because of the deaf child's difficulty in learning
   b. This is only true if the deaf child gets the wrong elementary education
   c. Colleges shouldn't be allowed to discriminate against the deaf that way
   d. These people are talking about previous generations and are unaware of current progress
   e. This seems quite logical to me

5. Alexander Graham Bell said, "I think the use of the sign language will go out of existance very soon".

   a. This has happened
   b. This statement just shows how wrong Bell could be
   c. This will happen soon because of our better teaching methods
   d. Bell would never have said that
   e. This is why it is unnecessary for my children to learn signs

6. Most deaf people marry a deaf person

   a. This is not true
   b. If this is true, it is because of the communication barrier imposed by deafness
   c. This is true only if the deaf have been segregated from contact with hearing people
   d. This is fine if it's what the deaf want
   e. This will not be true of my child because we're treating him as a normal person

7. If a friend of mine discovered that her child was deaf

   a. I'd tell her about the school my child is in
   b. I'd suggest some things she should read about the different types of programs
   c. I would sympathize with her but not interfere with her right to make her own decision
   d. I'd try to get to her before people filled her with wrong information
   e. I would feel obligated to share with her the satisfaction I have now that I've found the right program

8. It is reported that many deaf adults who do not have intelligible speech are successfully employed and well adjusted.

   a. There are rare exceptions
   b. This does not surprise me
   c. They would be even more successful if they could speak
   d. I don't think this is true
   e. Statements like this should not be made as they will discourage parents from teaching their child to talk

9. An oral teacher of the deaf claims that many deaf children can't learn to speak and lipread.

   a. The statement is false and I can't believe a teacher would say that
   b. She probably doesn't know the methods used at my child's school
   c. That's true - she means retarded and visually handicapped deaf children
   d. She shouldn't be allowed to teach
   e. I agree - some can but many can't

10. One of the disadvantages of getting together with other parents whose children are in my child's school is:

a. I know what they think - I want to hear the other side
b. No one of us has the same problems as another parent
c. There are no disadvantages
d. It requires time away from my own family
e. We might support each other's mistakes

11. A deaf adult says that he and his deaf friends don't think speech is very important.

a. He and his friends probably have poor speech - sour grapes
b. I can't imagine anyone, deaf or hearing, saying that
c. Possibly he and his friends have found satisfactory adjustment without speech
d. This is what can happen if a child is sent to the wrong type of school
e. This is an unfortunate but very common statement

12. We all have too little time. Because of this I should devote my short reading time to:

a. Books and articles whose authors know what they're talking about
b. Topics other than deafness because I have faith in my child's school
c. Learning about methods of teaching the deaf which I disagree with
d. Controversial articles - so I can defend the correct approach
e. Books on manual communication so I can get to know my child better

13. Most deaf people prefer to associate with other deaf people rather than hearing people.

a. This is not true
b. This will not be true of my child if I raise him right
c. I imagine this is true - they understand each other's speech easier
d. This is why deaf children should be taught with regular children
e. If they are happy doing this - that's fine

14. The primary function of an educational program of hearing impaired children is to:

a. Provide short term help which will enable the child to enter a regular school with hearing children
b. Teach the children to hear better
c. Develop speech and speechreading skills
d. Provide appropriate instruction in academic skills, i.e., reading, language, writing
e. Present opportunities for association with hearing children

APPENDIX H

PARENT CHECK LIST

At the top of each page in this booklet is a different word. We want you to respond to this word by making an X between several adjective pairs. For example, the word at the top of the page might be

EDUCATION

Keep this word in mind as you proceed down the page marking the adjective pairs. If you feel the word is close to one end, you should mark your paper like this:

bad __X__:_____:_____:_____:_____:_____:_____ good

or

bad _____:_____:_____:_____:_____:_____:__X__ good

If you feel the word is close to one end but not extremely so, you should mark your paper like this:

strong _____:__X__:_____:_____:_____:_____:_____ weak

or

strong _____:_____:_____:_____:_____:__X__:_____ weak

If you feel the word is a little bit related to one adjective, you should mark your paper like this:

fast _____:_____:__X__:_____:_____:_____:_____ slow

or

fast _____:_____:_____:_____:__X__:_____:_____ slow

If you feel the word is not close to either adjective or that the adjectives make no sense with the word at the top of the page, you should mark your paper like this:

safe _____:_____:_____:__X__:_____:_____:_____ dangerous

When you have finished one page and made an X between each pair of adjectives, turn the page and begin again keeping in mind each new word at the top of the page.

POINTS TO REMEMBER

1. RESPOND TO EVERY LINE. DO NOT SKIP ANY
2. DON'T CHECK ANY LINE MORE THAN ONCE.
3. WORK QUICKLY. GO BY YOUR FIRST IMPRESSION.
4. DON'T LOOK BACK OR TRY TO REMEMBER HOW YOU RESPONDED TO OTHER WORDS.
5. BE SURE TO MAKE YOUR MARKS ON THE LINES.

THIS			NOT THIS		
	X			X	

PRESCHOOL

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

SPEECH

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

INTEGRATION OF A DEAF CHILD INTO A HEARING CLASS

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

SPEECHREADING--LIPREADING

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	[illegible]ful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

HEARING AID

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

AUDITORY TRAINING

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

SIGNLANGUAGE

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

FINGERSPELLING

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

DEAFNESS

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:_____	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

HEARING IMPAIRED

good	_____:_____:_____:_____:_____:_____:_____	bad
sad	_____:_____:_____:_____:_____:_____:_____	happy
dirty	_____:_____:_____:_____:_____:_____:	clean
nice	_____:_____:_____:_____:_____:_____:_____	awful
fair	_____:_____:_____:_____:_____:_____:_____	unfair
disagreable	_____:_____:_____:_____:_____:_____:_____	agreable
valuable	_____:_____:_____:_____:_____:_____:_____	worthless
boring	_____:_____:_____:_____:_____:_____:_____	fun
productive	_____:_____:_____:_____:_____:_____:_____	unproductive
useful	_____:_____:_____:_____:_____:_____:_____	useless
harmful	_____:_____:_____:_____:_____:_____:_____	beneficial
important	_____:_____:_____:_____:_____:_____:_____	unimportant

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